Otay Water District
North District Recycled Water System Development Project

Phase I Concept Study

DRAFT SUBMITTAL

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Table of Contents

ACRONYMS AND ABBREVIATIONS iii

EXECUTIVE SUMMARY ES-1

SECTION 1 – INTRODUCTION 1-1
- 1.1 District Background 1-1
- 1.2 Need to Develop Local Water Supply 1-2
- 1.3 North District Recycled Water System Development Project 1-3

SECTION 2.0 – PROJECT DEFINITION 2-1
- 2.1 Potential Customers 2-1
- 2.2 Infrastructure Concepts 2-2
- 2.3 Project Costs 2-5

SECTION 3.0 – REGULATORY PROCESS 3-1
- 3.1 State and Local Water Quality Control Board Policies 3-1
- 3.2 Clean Water Act (CWA) 3-1
- 3.3 California Water Code (CWC) 3-2
- 3.4 State and Federal Antidegradation Policies 3-2
- 3.5 National Environmental Protection Act (NEPA) and California Environmental Quality Act (CEQA) 3-2
- 3.6 California Code of Regulations (CCR) 3-3
- 3.7 Basin Plan – Beneficial Uses and Water Quality Objectives 3-3
- 3.8 Master Reclamation Permit 3-8
- 3.9 Department of Public Health: Preparation of an Engineering Report for the Production, Distribution and Use of Recycled Water 3-9
- 3.10 Summary of Regulatory Compliance Issues 3-11

SECTION 4.0 – WATERSHED PROTECTION 4-1
- 4.1 Physical Characteristics of the Watershed 4-1
- 4.2 Water Quality Monitoring in the Watershed 4-2
- 4.3 SWA Urban Runoff Diversion System 4-9
- 4.4 Other Watershed Facilities and Operations 4-10
- 4.5 Summary of Findings 4-14

SECTION 5.0 – PUBLIC OUTREACH 5-1
- 5.1 Identification of Stakeholders 5-1
- 5.2 Interagency Agreements 5-3

SECTION 6.0 – IMPLEMENTATION PLAN 6-1
- 6.1 Opportunities 6-1
- 6.2 Constraints 6-3
- 6.3 Implementation Plan 6-4

TABLES

2-1 Potential North District Recycled Water Irrigation Customers 2-2
2-2 Unit Costs 2-6
2-3 Distribution System Upgrades and Costs 2-7
3-1 Water Quality Objectives for Middle Sweetwater Hydrologic Area (San Diego Region Basin Plan) 3-7
3-2 RWCWRF Effluent for Municipal Water Supply Maximum Contaminant Levels Compliance 3-10
3-3 RWCWRF Effluent Characteristics and Discharge Limitations 3-12
3-4 Existing and Potential Beneficial Uses 3-13
3-5 Water Quality Objectives for Ground Waters 3-13
3-6 Water Quality Objectives for Inland Surface Water 3-14
4-1 Historical Groundwater Pollutant Concentrations in Jamacha Hydrologic Subarea Groundwater and Current RWCWRF Discharge Conditions 4-5
4-2 Simulated Extracted Groundwater TDS Concentrations 4-6
4-3 General Water Quality for Jamacha Valley Basin Wells (SWA) 4-7
4-4 Historical Surface Water Pollutant Concentrations in Jamacha Hydrologic Subarea and Current RWCWRF Discharge Conditions 4-7
4-5 Water Quality Summary 4-8

FIGURES

1-1 Study Area 1-4
2-1 Recycled Water System 2-3
2-2 R.W. Chapman Water Recycling Facility Site Plan 2-8
3-1 Hydrologic Subareas 3-5
4-1 Sweetwater Basin Wells and Urban Runoff Monitoring Locations 4-3
4-2 Sweetwater Reservoir Urban Runoff Diversion System 4-11
4-3 Septic System Repair Locations in Jamacha HSA 4-15
6-1 NDRWSDP Implementation Plan and Schedule 6-5

APPENDICES

A. Chlorine Contact Improvement Alternatives – Opinions of Cost
B. Regulations and Policies Associated with Recycled Water Use

Acronyms and Abbreviations

AF	acre feet
AFY	acre feet per year
AMSL	Above Mean Sea Level
BMPs	best management practices
BOD	biochemical oxygen demand
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CWA	Clean Water Act
CWC	California Water Code
DEH	County of San Diego Department of Environmental Health
District	Otay Water District
DPH	California Department of Public Health
DWR	California Department of Water Resources
gpm	gallons per minute
HA	Hydrologic Area
HAS	Hydrologic Subarea
IRP	Integrated Water Resources Plan
MCLs	maximum contaminant levels
mg/L	milligrams per Liter
MGD	million gallons per day
NDRWSDP	North District Recycled Water System Development Project
NEPA	National Environmental Protection Act
NPS	nonpoint source
PAH	Polyaromatic Hydrocarbons
PEIR	Programmatic Environmental Impact Report
RWCWRF	Ralph W Chapman Water Recycling Facility
RWQCB	Regional Water Quality Control Board
SBWRF	South Bay Water Reclamation Facility
SWA	Sweetwater Authority
SWRCB	California State Water Resources Board
TDS	total dissolved solids
TMDL	Total Maximum Daily Load
URDS	Urban Runoff Diversion System
USEPA	U.S. Environmental Protection Agency
WDRs	Waste Discharge Reports
WRF	Water Reclamation Facility
µS/cm	microseimen per centimeter

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Executive Summary

For many San Diego County agencies like Otay Water District, reliable water supply is threatened by drought conditions and curtailment of the imported water from Northern California. Conservation is essential and new water supply sources such as the North District Recycled Water System Development Project (NDRWSDP) are critical to meeting future water demands.

The current imported water supply situation, coupled with a Stage I water alert due to drought conditions have made it difficult for agencies like Otay Water District to guarantee future reliable water service. The NDRWSDP allows Otay Water District to expand recycled water service into its North District, taking 700 to 1,500 acre feet per year of existing irrigation uses off of the potable water system. In doing so, the District could recognize a 1 to 3 percent reduction in its imported potable water demand, the equivalent of an additional 35,000 to 65,000 households achieving the District's 20 gallons per day water conservation challenge.

Recycled water is a safe and reliable water supply that can be used in watersheds that are used as a source of municipal water supply. Where water quality objectives are preserved and best management practices are employed, the municipal water supply source can be successfully protected.

Otay Water District strongly supports the protection of water quality in regional water supplies both within and outside of their District boundaries. Through its 2007 Master Reclamation Permit, the District is allowed to use recycled water in the watersheds of its Central and South service areas. Because one of those watershed basins (La Nacion HSA) has municipal beneficial uses, the Master Reclamation Permit requires the District to annually test the recycled water for potential contaminants similar to those tested for in drinking water. This additional testing requirement provides valuable information regarding any potential concerns.

The District has recently improved the reliability measures at the RWCWRF to allow for immediate and automatic bypassing of recycled water that does not meet Title 22 standards at the plant's discharge point. Although bypassing has never been required, there are now additional measures in place to increase the plant's reliability. The proposed use of recycled water in the Middle Sweetwater Basin would follow the same successful testing protocol and protection through routine testing of the recycled water quality and routine inspection of the recycled water use areas for compliance with the District's rules and regulations.

In preliminary discussions with each of the regulatory agencies who will be associated with permitting the NDRWSDP, none have raised any concerns regarding the feasibility of implementing the proposed project in the North District. With appropriate treatment and best management practices in place, these agencies acknowledge that recycled water in the North District could be a regionally beneficial project.

There is an untapped recycled water market in the North District and significant long term benefits could be achieved through implementation of a reuse project.

Golf courses, schools, parks, homeowner associations and commercial developments were identified as potential markets that currently use potable water for irrigation purposes. These

customers are located primarily in the more developed areas on the north side of Sweetwater River, approximately 2 miles upstream from the Sweetwater Reservoir. On an average day, these customers would use approximately 0.7 MGD of recycled water, and on a maximum day, 1.4 MGD, just over the production capacity of the RWCWRF (1.2 MGD). Because the North District recycled water markets are in close proximity to the RWCWRF, a distribution system can be constructed relatively cost effectively. Based on a project concept level of planning, the infrastructure costs for the NDWRSDP are estimated to be in the range of $14 to 15 million. The District intends to convert an existing potable water reservoir to the recycled system to reduce capital cost. Using existing infrastructure to serve the North District and reducing energy costs by reducing pumping requirements, presents another opportunity for the District to maximize its resources and deliver recycled water in a cost effective manner.

The NDRWSDP also provides an opportunity for the District to maximize the use of regional recycled water resources in the South San Diego area. In expanding their distribution system into the North District, the District will draw more recycled water from the City of San Diego's South Bay Water Reclamation Facility. The South Bay plant is currently capable of producing 9 MGD (and in the future will be able to produce 14 MGD). With only 6 to 7 MGD of recycled water demand, excess sewage is treated to secondary standards, bypasses the tertiary treatment process, and is discharged to the ocean outfall. By increasing the District's demand, this valuable resource is no longer wasted but treated and beneficially reused. The City of Chula Vista is currently evaluating the feasibility of constructing a 5 to 6 MGD reclamation facility to meet its local wastewater treatment needs. Critical to the project's success, is the ability to market and sell the recycled water to areas with a need for and a distribution system in place. The District has been working closely with the City of Chula Vista to evaluate the feasibility of the proposed project and the benefits of increasing the region's recycled water supply.

Protection of water quality in the Sweetwater Basin is a key concern. Existing diversion of urban runoff from the Sweetwater Reservoir, on-going water quality monitoring of both groundwater and surface water, as well as the implementation of best management practices associated with irrigation with recycled water, are expected to demonstrate that the current water quality objectives in the basin can be met.

With recycled water quality ensured at the source, and rules and regulation for recycled water use enforced at the proposed customer sites, there is extremely low risk of recycled water runoff or infiltration reaching the surface or groundwater in the Sweetwater River basin. Typically, customers who retrofit their irrigation systems to accommodate recycled water become better water stewards, i.e. they tend to use less water and use it more efficiently. However, even incidental runoff or infiltration could be of concern to a sensitive watershed. As the Sweetwater River basin is tributary to the Sweetwater Reservoir, used by the Sweetwater Authority as a source of drinking water, it is important that this water supply be protected. With good reason, Sweetwater Authority has implemented significant measures to protect this valuable resource.

To implement the NDRWSDP, the District's Master Reclamation Permit for the RWCWRF will need to be updated to include the North District service area. As part of that update, the San Diego Regional Water Quality Control Board will assess the Middle Sweetwater Basin beneficial uses and water quality objectives to assure compliance with their "anti-degradation" policy. Using the Water Quality Control Plan for the San Diego Basin (Basin Plan), the Regional Board will arrive at the appropriate effluent limitations, applied to the plant's recycled water (effluent),

to be protective of those beneficial uses and allow for water quality objectives in the receiving waters to be maintained.

In some instances, the Middle Sweetwater HA (groundwater water) and Sweetwater River (surface water) water quality objectives are more stringent than the current services areas in Otay's South District which includes La Nacion HSA (having the most stringent limits in the South District) and a possibility exists that the effluent limits for the RWCWRF might be revised for TDS, chloride, sulfate, and nitrate. TDS, chloride, and sulfate levels in recycled water are in the range of the natural source water in the basin, and are not anticipated to have an impact on the watershed. Presently, the concern or constraint is limited to total nitrogen or nitrate levels in the RWCWRF effluent and the limitations of the 2007 Master Reclamation Permit. The District is currently evaluating how best to achieve reduction in total nitrogen. The action plan is anticipated to include modifications to the treatment process, a schedule to implement the changes, and cost estimates for budgeting purposes.

Sweetwater Authority employs an extensive urban runoff interception and diversion system (URDS) to protect the Sweetwater Reservoir and minimize the impact of urban contaminants on its drinking water supply. The URDS captures first flush storm flows and dry weather urban runoff before the water enters the Sweetwater Reservoir. The level of monitoring and surveillance of the watershed performed by Sweetwater Authority and San Diego County provides the Otay Water District with opportunities to partner with these agencies to monitor any benefits and impacts of increased recycled water use in the watershed. The URDS has proven to be an effective barrier and would continue to work as such for any incidental recycled water incursion.

Of significant concern with the use of recycled water upstream of Sweetwater Reservoir is the public's perception and the political challenges; both present possible obstacles to obtain support for the NDRWSDP. A coordinated public outreach program, with Sweetwater Authority support, is critical to the project becoming reality.

The District has been very successful in developing a recycled water program within its service area and educating its customers on the value of conserving potable water resources. The public at large has indicated in annual surveys that they support the use of recycled water in the District. In the June 2008 survey, North District residents specifically endorsed expansion of service into the North District. The District has partnered with local water agencies, municipalities and regulatory agencies to maximize use of local resources in a safe and reliable manner, and will continue to do so. The District will work closely with Sweetwater Authority to resolve water quality concerns and retain consumer confidence. The District intends to thoroughly explore stakeholder concerns regarding the expansion of recycled water use into the North District through interagency communication and public meetings and their comments and suggestions will be taken into account in the planning of this project.

One of the proposed customers is the District-sponsored, award-winning Water Conservation Garden. Located on the campus of Cuyamaca College, this 4.2 acre demonstration garden illustrates the many ways water-wise landscapes can be achieved economically and beautifully. The Water Conservation Garden has an exhibit on the beneficial uses of recycled water and staff is often questioned as to why the Garden does not use recycled water. Executive Director Marty Eberhardt has expressed her enthusiasm for bringing recycled water into the North District and using it within the Garden. As a potential customer of the NDRWSDP, the Water

Conservation Garden will be an excellent recycled water advocate and education partner within the community.

A multi-phased implementation plan has been developed to design, process, permit and construct a recycled water distribution system throughout the North District.

The NDRWSDP was initially conceived by the District to be implemented in phases. Phase I would produce a concept feasibility study to determine if the proposed use of recycled water in the North District was feasible from a stakeholder and regulatory perspective. Phase II was planned to further investigate and resolve any issues identified in the Phase I Concept Study resulting in a permittable project. Phase III would take the project through environmental review and design. Construction and operation will occur in Phase IV.

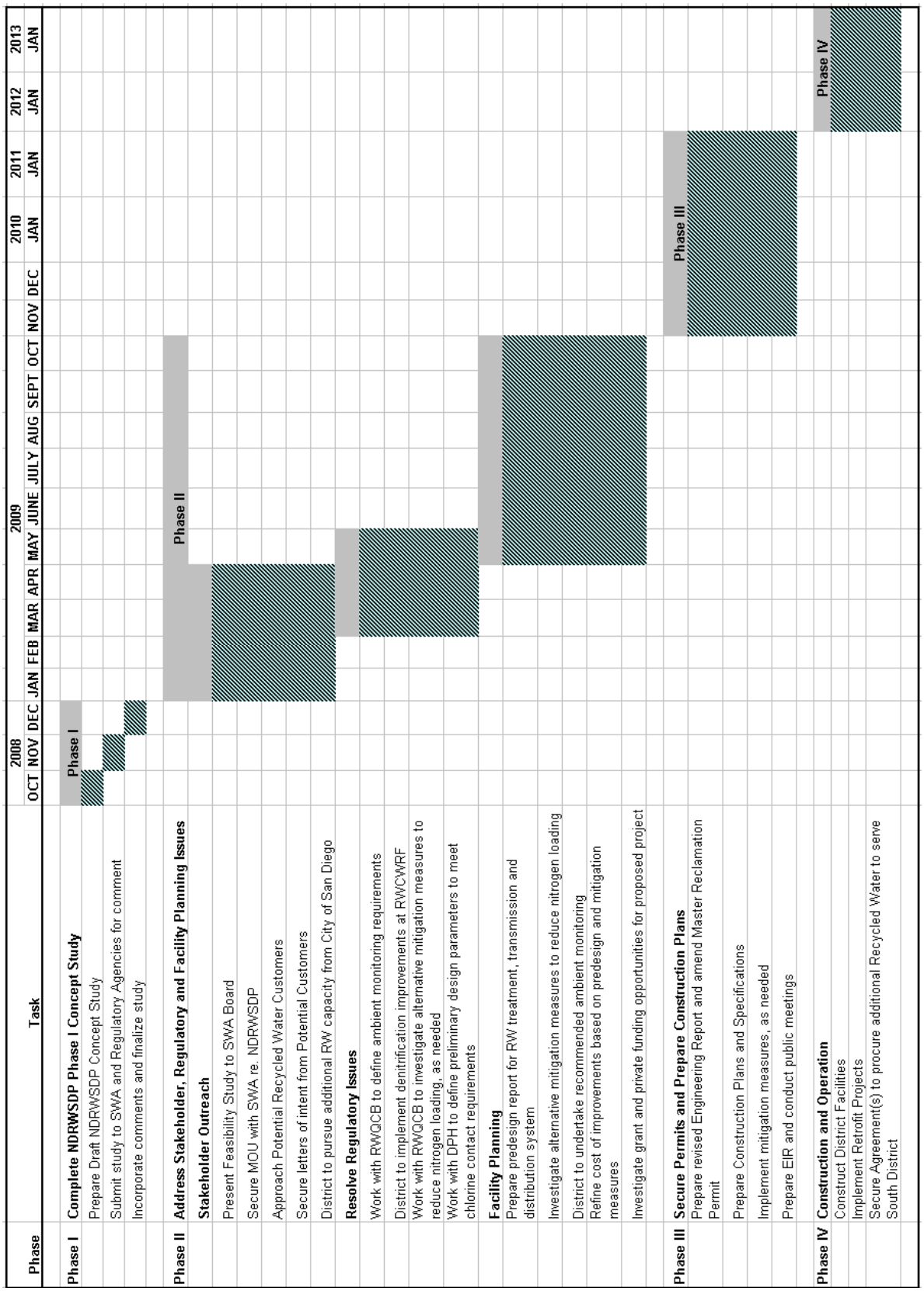
To conclude Phase I, it is recommended that this Concept Study be submitted to Sweetwater Authority and regulatory agencies as a draft for their review and comment. Their comments will be incorporated into the Phase I Concept Study. Based on the opportunities and constraints discussed in the preceding sections, it is clear that the issues requiring further refinement fall under the following categories: stakeholder outreach, regulatory compliance issues, and facility planning.

Stakeholder Outreach includes obtaining support from Sweetwater Authority through a memo of understanding or other similar vehicle associated with the pursuit of this project to alleviate any concerns that Sweetwater Authority may have regarding the District's intent and ability to protect water quality in the watershed. Potential customers will also be contacted to further determine their willingness and ability to participate in a recycled water retrofit project.

Regulatory Issues include defining the site specific parameters that may be imposed to protect water quality in the watershed. Establishing permitting and monitoring requirements and defining effluent quality requirements to determine the long range treatment goals for the RWCWRF will be critical in Phase II. Input from the regulatory agencies will also be sought to identify any mitigation measures that may be required to meet water quality objectives.

After consensus has been reached with the stakeholders and information gathered from the regulatory agencies, parameters will be set such that facility planning can begin for the treatment, transmission and distribution system for the NDRWSDP. Preliminary design will refine the sizes of the proposed improvements, alignments of the distribution system and available rights of way, and physically evaluate existing infrastructure for conversion to recycled water use. If mitigation measures have been recommended by the regulatory agencies to achieve water quality limitations, then those measures will be evaluated and developed into an implementable project. Based on the preliminary design, a more refined cost estimate can be developed and opportunities for funding assistance identified.

A proposed implementation schedule for the NDRWSDP is provided on the following page.


Phase
Task
2008
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Phase I
Complete NDRWSDP Phase I Concept Study
Prepare Draft NDRWSDP Concept Study
Submit study to SWA and Regulatory Agencies for comment
Incorporate comments and finalize study
Phase II
Address Stakeholder, Regulatory and Facility Planning Issues
Stakeholder Outreach
Present Feasibility Study to SWA Board
Secure MOU with SWA re. NDRWSDP
Approach Potential Recycled Water Customers
Secure letters of intent from Potential Customers
District to pursue additional RW capacity from City of San Diego
Resolve Regulatory Issues
Work with RWQCB to define ambient monitoring requirements
District to implement denitrification improvements at RWCWRF
Work with RWQCB to investigate alternative mitigation measures to reduce nitrogen loading, as needed
Work with DPH to define preliminary design parameters to meet chlorine contact requirements
Facility Planning
Prepare predesign report for RW treatment, transmission and distribution system
Investigate alternative mitigation measures to reduce nitrogen loading
District to undertake recommended ambient monitoring
Refine cost of improvements based on predesign and mitigation measures
Investigate grant and private funding opportunities for proposed project
Phase III
Secure Permits and Prepare Construction Plans
Prepare revised Engineering Report and amend Master Reclamation Permit
Prepare Construction Plans and Specifications
Implement mitigation measures, as needed
Prepare EIR and conduct public meetings
Phase IV
Construction and Operation
Construct District Facilities
Implement Retrofit Projects
Secure Agreement(s) to procure additional Recycled Water to serve South District
Phase I
Phase II
Phase III
Phase IV

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Section 1
Introduction

To deliver a safe and reliable water supply to a water-scarce region in south San Diego County is the primary mission of the Otay Water District (District). The population of the District's service area has increased dramatically in recent years and the District is responding to this challenge by providing the infrastructure network needed and by diversifying water resources to ensure that there will always be a sufficient water supply. This work includes negotiating agreements with neighboring water agencies, investigating local groundwater aquifers, supporting efforts to develop ocean water desalination, supporting agricultural to urban water transfers, and promoting the use of recycled water.

The District is a recognized leader in the use of recycled water for irrigation and other commercial uses. Currently, more than one million gallons per day of high quality recycled water is produced by the District's Ralph W. Chapman Water Recycling Facility (RWCWRF). This recycled water is used to irrigate golf courses, parks and open space in the South District, primarily in the eastern portion of the City of Chula Vista. With the recent completion of a connection to the City of San Diego, the District now has the ability to obtain six million gallons per day (MGD) of recycled water from the South Bay Water Reclamation Facility (SBWRF). With both plants in operation, the District is currently able to serve more than seven million gallons of recycled water per day to recycled water customers within the southern portion of the District.

It is prudent planning on the District's part to be looking for opportunities to expand their successful recycled water program into areas that are not currently served. By expanding use of recycled water into the North District, the District gains additional recycled water customers and conserves potable water supplies, while continuing to serve their recycled water customers in the South District.

1.1 DISTRICT BACKGROUND

Otay Water District is a publicly owned water and sewer service agency serving approximately 186,000 customers within a 125.5 square mile area encompassing the San Diego County communities of southern El Cajon, La Mesa, Rancho San Diego, Jamul, Spring Valley, Bonita, Eastern Chula Vista, EastLake and Otay Mesa along the international border with Mexico. The District is a California special district authorized under the provisions of the Municipal Water District Act of 1911. The District owns and operates a wastewater collection and reclamation system that provides sewer service to approximately 6,000 homes in the Jamacha drainage basin.

Otay Water District has two sources of recycled water supply: recycled water produced locally at the District's RWCWRF and a supplemental recycled water supply produced at the City of San Diego's SBWRF. The RWCWRF is located near the intersection of Campo Road/Highway 94 and Singer Lane, within the Middle Sweetwater River basin. The facility was originally constructed in 1971 and upgraded in 1990. The RWCWRF provides advanced treatment of approximately 1.3 million gallons of wastewater per day (MGD) to meet the State's Title 22 requirements for reuse. The SBWRF is located west of Interstate 5, on Dairy Mart Road in the City of San Diego, along the U.S. - Mexico International Border. This plant produces

approximately 9 MGD of Title 22 recycled water. The District purchases up to 6 MGD of the recycled water produced at the SBWRF. The District's Master Reclamation Permit (Order No. R9-2007-0038) was revised in May 2007 to allow the District to distribute recycled water from both of these facilities.

Otay Water District operates and maintains over 77 miles of recycled water transmission and distribution pipelines, pump stations and reservoirs to provide recycled water service primarily for landscape irrigation in the District's Central Service Area which includes Telegraph Canyon and the Salt Creek area of the Otay Valley, throughout most of the City of Chula Vista, east of Interstate 805. The District's current Master Reclamation Permit also allows use of recycled water in the Tijuana River watershed, generally located on Otay Mesa within the District's South Service Area.

1.2 NEED TO DEVELOP LOCAL WATER SUPPLY

Water supply agencies in California continue to face climatological, environmental and legal challenges. The District depends solely on imported water and this dependence on outside sources can make it challenging to meet water demands reliably and cost-effectively over time, especially in protracted dry-weather periods. One of the District's most critical goals in recent years is to develop local water supplies. Given the current drought conditions and court-ordered restrictions on imported water, the District continues to seek ways to conserve potable water supplies.

The need to free up potable water supplies has become significantly more important over the past year. In addition to extended drought conditions in the area, court rulings limiting imported water supplies to Southern California have caused concern among local water districts. The August 2007 court ruling in the case of NRDC v. Kempthorne to restrict pumps that supply water from the Sacramento-San Joaquin River Delta to 25 million Californians, including 3 million residents in San Diego County, along with on-going drought conditions in the western United States, could result in near future water supply shortages. The San Diego County Water Authority is imposing short term drought management actions and implementing a long term planned and measured response to these recent developments and intends to update its Urban Water Management Plan to include these measures. Although the water agencies involved in providing water supply to Otay Water District are intent, and in fact mandated, to devote their resources and supplies to maintaining a reliable supply to customers within their service areas, it is prudent that the District pursue opportunities to preserve potable water supplies and seek alternative sources of water.

In 2007, the District completed an Integrated Water Resources Plan (IRP) that examined potential future supply options and their performance with regard to long-term, comprehensive water resource objectives. Included in this study was the concept of expanding the District's recycled water system into the North District. The concept was proposed as an option to maximize recycled water use while decreasing imported water supply needs and operating costs of the District's existing recycled water system. Recycled water supply to the North District could be provided by the District's RWCWRF. This recycled water would be redirected from the District's Central Service Area to the North District. The District's connection to the City of San Diego's SBWRF would then fully serve the District's Central and South Service Areas. The North District Recycled Water System Development Project (NDRWSDP) was recommended for further study.

The City of Chula Vista is currently evaluating the feasibility of constructing a 5 to 6 MGD reclamation facility to meet its local wastewater treatment needs. Critical to the project success, is the ability to market and sell the recycled water to areas with a need for and a distribution system in place. The District has been working closely with the City of Chula Vista to evaluate the feasibility of the proposed project and the benefits of increasing the region's recycled water supply.

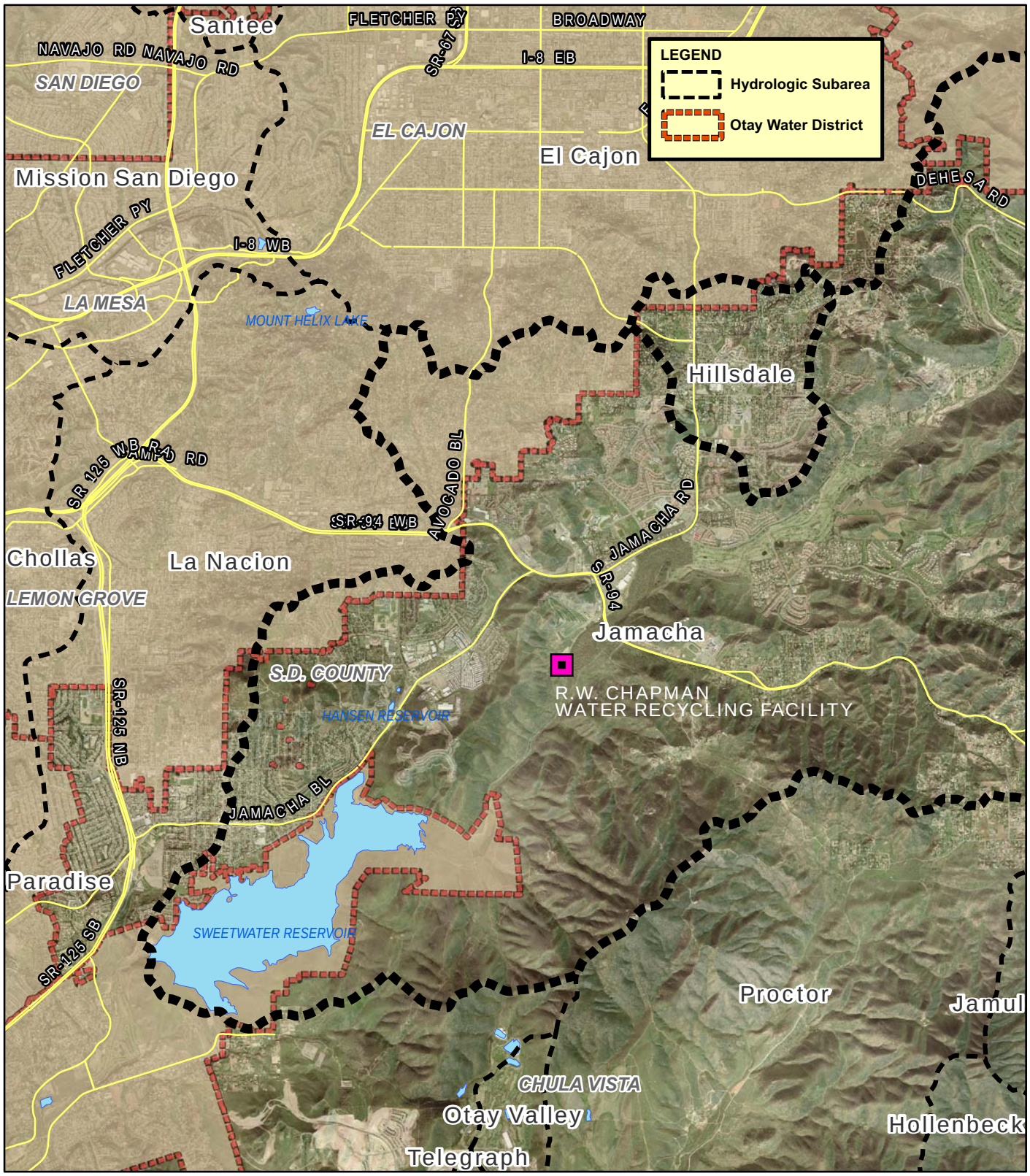
1.3 NORTH DISTRICT RECYCLED WATER SYSTEM DEVELOPMENT PROJECT

The NDWRSDP was originally conceived in 2004 when the District conducted a preliminary recycled water market assessment and developed alternative recycled water system concepts to convey recycled water into the North District. This was done to determine potential recycled water use opportunities within the North District to effectively utilize the entire supply resource from the RWCWRF. The concept was further developed in the 2007 IRF and recommend for additional study. The potential recycled water markets are located within the Middle Sweetwater River in an area commonly known as the Jamacha Basin. These markets could use approximately 1,300 acre-feet per year (AFY) of recycled water for landscape irrigation to offset an equivalent amount of imported water. This represents a significant reduction in potable water use within the District during critical summer demand periods.

The Jamacha Basin lies between the Loveland Reservoir and the Sweetwater Reservoir, both owned and operated by Sweetwater Authority. Figure 1-1 illustrates the boundaries of the hydrologic basins in the area. Recycled water from the RWCWRF would be used to supply recycled water markets in the Jamacha Basin. Because the Jamacha Basin is at a lower elevation than the recycled water use areas to the south, the pumping lift would be reduced approximately 200 feet, thus saving substantial power costs.

There are, however, limitations on the application of recycled water to the land within the specific portions of the District's jurisdiction. The use of recycled water in geographic areas upstream of untreated water storage reservoirs that serve as water supply resources for potable water purposes will require revisions to the District's current master reclamation permit to conform to the requirements of the San Diego Water Quality Control Plan (Basin Plan). The project must also address concerns held by neighboring water purveyors and existing groundwater users' potential sensitivity to the NDRWSDP concept. For these reasons, the use of recycled water to meet irrigation demands in the North District will be conditional upon inter-agency coordination and the permitting decisions of the California Regional Water Quality Control Board (RWQCB) and the California Department of Public Health (DPH).

To assist with developing inter-agency and other stakeholders' awareness and ensure full project acceptance, the proposed NDRWSDP concept has been divided into three (3) phases. Phase I will conduct an investigation and study to identify compliance requirements involving various stakeholders, determine respective mitigation measures, and evaluate the feasibility of achieving compliance through various strategies. Phase II effort is currently envisioned as proceeding with the Phase I recommendations consisting of regulatory compliance requirements implementation, continued stakeholder participation, feasibility assessment recommendations, market assessment acceptance, refined facility planning, and capital and operational cost estimates. Phase III effort is currently envisioned as implementation of the



STUDY AREA
FIGURE 1-1

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recommended Phase II study outcomes that could include preliminary design, permitting and environmental compliance, market assurances, right-of-way acquisitions, project design, and construction of the contemplated capital improvement program project facilities.

The scope of work for the first phase of the NDRWSDP conducts an investigation to identify the components of the project, to identify compliance requirements, to determine opportunities and constraints and develop mitigation strategies. The following sections of this report are structured to meet these requirements, as described below:

Section 2 – Project Definition
This section provides a description of the proposed North District Recycled Water System infrastructure requirements and project costs.

Section 3 – Regulatory Process
This section provides a review of the permitting requirements associated with implementing the NDRWSDP.

Section 4 – Watershed Protection
This section provides an overview of the physical, hydrologic and land use characteristics of the watershed and the existing water quality protection measures in place.

Section 5 – Public Outreach
This section provides an overview of public outreach efforts, identifying stakeholders and interagency participation.

Section 6 – Implementation Plan
This section evaluates the measures that could be implemented to successfully mitigate or monitor the identified constraints associated with the project and contains the proposed implementation plan for the next steps in the development of a NDRWSDP.

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Section 2.0
Project Definition

Otay Water District's North District is located north and east of Sweetwater Reservoir. The area is bisected west to east by State Route (SR) 94/Campo Road and encompasses the San Diego County communities of Spring Valley, Rancho San Diego, Jamacha and Jamul and the southern portion of the City of El Cajon. The area lies within the Middle Sweetwater watershed and is home to two golf courses that lie along the Sweetwater River valley, the Steele Canyon Golf Course and the Rancho San Diego Golf Course. The area to the north of the river valley includes residential and commercial development and is essentially builtout. The area to the south and east of the river valley is largely rural and no significant development is planned for this area.

2.1 POTENTIAL CUSTOMERS

A list of potential recycled water customers in the North District was determined by evaluating the District's meter record data for potable irrigation meters in the North District service area. Golf courses, schools, parks, homeowner associations and commercial developments were identified as potential markets that currently use potable water for irrigation purposes. These customers are located primarily in the more developed areas on the north side of Sweetwater River, approximately 2 miles upstream from the Sweetwater Reservoir. Figure 2-1 identifies these potential customers and their location within the basin. A conceptual pipeline alignment is presented to show how these customers might be served from the RWCWRF.

Table 2-1 lists 35 potential recycled water customers in the North District The largest potential customers include the Steele Canyon Golf Course, County of San Diego Parks, local school sites including Steele Canyon High School, Cuyamaca College and large homeowner's associations and commercial shopping centers. Together these potential recycled water customers currently use approximately 796 acre feet per year (AFY) of potable water for irrigation. On an average day, these customers would use approximately 0.7 MGD of recycled water, and on a maximum day, 1.4 MGD, just over the production capacity of the RWCWRF (1.3 MGD). Typically, when converting customers to recycled water, not all of the identified potential sites become successful candidates for retrofits and for those that are successful candidates, retrofitting improves the water use efficiency at the site and total water use can decrease. Additional customers may need to be identified to fully utilize the daily capacity of the RWCWRF. For flexibility in the distribution system, it is assumed that pumping capacity from the RWCWRF to the Central Service Area would be maintained so that excess recycled water, especially during the winter season, could be stored for use in the Central and South recycled water distribution systems.

Potential candidates that were eliminated from consideration for recycled water use include the Rancho San Diego Golf Club and Caltrans. The Rancho San Diego Golf Club (Cottonwood GC) currently uses well water for irrigation, and therefore has no current need for recycled water. Discussions with Caltrans have indicated that their highway beautification project at the east end of SR-94 has encountered limited success due to the rock found at the site and the difficulty in establishing planting and irrigation systems there. Caltrans anticipates irrigating in this vicinity only as long as it takes to establish the plantings and only occasionally after that. No demand for recycled water in this area is foreseen.

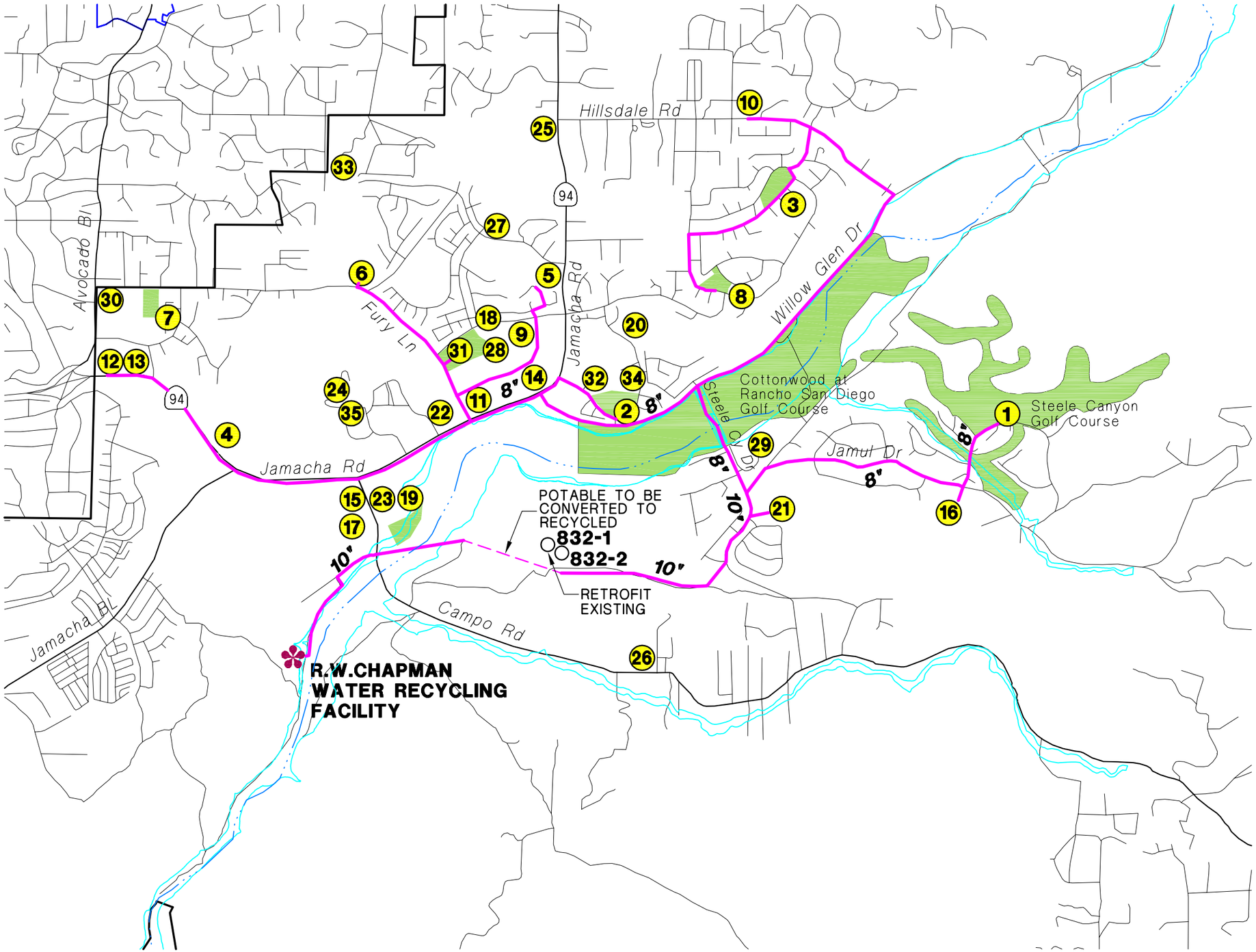
Table 2-1. Potential North District Recycled Water Irrigation Customers

Map ID[1]	Customer Name	Demand (AFY)	Map ID[1]	Customer Name[1]	Demand (AFY)
1	Steele Canyon Golf Club	300.0[2]	19	YMCA Sports Complex	8.3
2	Con Am Partners	78.7	20	Garcia Alex R	7.4
3	County of San Diego Woodhaven Pk	33.9	21	County of San Diego Steele Canyon Pk	6.6
4	Skyline Wesleyan Church Inc	31.8	22	Kohls Department Stores Inc	5.1
5	Rancho Hillside Inc	23.7	23	Ram Centers	1.7
6	Mirasol Homeowners Assn	21.9	24	Cuyamaca College	9.7
7	County of San Diego Lonnie Brewer Pk	19.7	25	Valhalla High School	9.3
8	County of San Diego Wind River Pk	18.2	26	Steele Canyon High School	53.6
9	S P Lavida Real	16.5	27	Rancho San Diego Elementary	3.4
10	Roman Catholic Church	12.6	28	Hillsdale Middle School	0.2
11	Collins Capital Properties	12.3	29	Jamacha Elementary (LRR)	13.7
12	CA Rancho San Diego Village	11.9	30	Avocado Elementary	1.8
13	Lanoga Corp	10.9	31	County of San Diego Hillsdale Pk	24.7
14	Thrifty Payless	10.5	32	County of San Diego Hilton Head Pk	3.7
15	Vestar California XVII	9.4	33	County of San Diego Damon Lane Pk	2.7
16	S Canyon Associates Del	9.0	34	County of San Diego Cottonwood Pk	6.0
17	Edwards Theatres Inc	8.5	35	Water Conservation Garden Cuyamaca College	4.9
18	Brabham Street	8.3		**Total**	**795.8**

[1] See Figure 2-1 for location of customers
[2] Demand does not include groundwater consumption.

2.2 INFRASTRUCTURE CONCEPTS

Currently, no recycled water distribution facilities are located in the North District; therefore, in order to distribute recycled water in this service area, a conceptual layout of transmission and distribution pipelines was developed, as shown on Figure 2-1. In addition to adding distribution pipelines some upgrades to the RWCWRF will also be needed. The effluent pump station and forcemain at the RWCWRF are currently configured to pump to a hydraulic grade of 940 feet. The 3.4 mile long forcemain provides a “basin” that allows for extended chlorine contact time to meet Title 22 water quality standards. The conceptual plan diverts this recycled water to the north for storage in the 832-1 reservoir. This reservoir is currently a potable water reservoir that will be converted for recycled water use. Because this reservoir is located closer to the RWCWRF and at a hydraulic grade of 832 feet, improvements or modifications to the effluent pump station and chlorine contact facilities will have to be made.



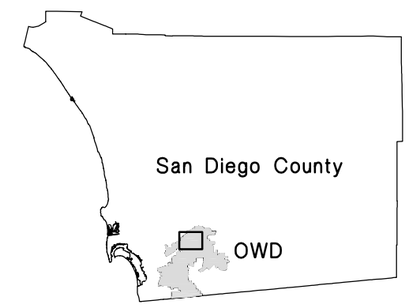
LEGEND

- OTAY WATER DISTRICT
- FLOODPLAIN 100 YEAR
- PROPOSED RW PIPELINE
- (23) PROPOSED RW USER
- 8" PIPELINE DIAMETER

NOTE:

SEE TABLE 2-1 FOR RECYCLED WATER USERS.

ALL PIPELINES ARE 6 INCH UNLESS OTHERWISE NOTED.



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0 2400

SCALE IN FEET

OTAY WATER DISTRICT
CONCEPTUAL NORTH DISTRICT
RECYCLED WATER SYSTEM

FIGURE 2-1

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For the purposes of this conceptual plan, it is assumed that the following upgrades will be needed to provide recycled water service in the North District;

- The existing RWCWRF Chlorine Contact Basin will need to be either: 1) abandoned, 2) upgraded, or 3) replaced, depending on chlorine contact time provided by the transmission system. The current Title 22 chlorine contact requirement that must be met is 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes based on peak dry weather design flow.
- Replace existing pumps, motors and appurtenances at the RWCWRF Effluent Pump Station.
- Construct a transmission main pipeline extending from the RWCWRF Effluent Pump Station to: 1) an existing 16-inch diameter potable water main that will need to be converted to recycled, or 2) the 832-1 Reservoir.
- Retrofit existing 832-1 Potable Reservoir to be used for recycled water.
- Construct distribution system pipeline.
- Upgrade data collection and logging systems, and regulatory compliance reporting systems.

Onsite retrofitting of irrigation systems must comply with cross-connection regulations. The improvements are typically undertaken by the customer who would benefit from savings in unit water costs over time. To comply with San Diego County's Cross Connection Control regulations, there must be no physical connection between the potable water supply and the recycled water supply, whereby the potable supply could become contaminated. Otay Water District employs a recycled water supervisor, knowledgeable about plumbing and cross connection control, who monitors construction and operation of the on-site and off-site facility distribution system. The site owner or operator must also appoint their own recycled water supervisor to monitor construction and operation of the recycled water distribution system. That recycled water supervisor must observe the District's recycled water rules and regulations that dictate appropriate use and management of the onsite recycled water facilities. The District reviews recycled water distribution system plans and recycled water irrigation system plans for cross-connections. This includes an initial cross-connection control site inspection and an annual cross-connection control inspection of sites having both recycled and potable water systems.

2.3 PROJECT COSTS

For the purposes of this study, the NDRWSDP upgrades have been classified as distribution system, transmission system upgrades, or regulatory compliance systems. Distribution system upgrades include the retrofit of the 832-1 Reservoir and the construction of the distribution pipeline. Transmission system upgrades include transmission system piping and all upgrades at the RWCWRF. Four transmission alternatives were evaluated to determine the most cost-effective.

Table 2-2 summarizes the unit costs for pipeline and chlorine contact basin construction; and pump station and reservoir retrofits, based on recent project experience. These costs were used to assess the costs of the proposed distribution system and the alternative transmission systems.

Table 2-2. Unit Costs

Item	Unit Cost	
Pipeline Costs		
6-inch diameter	$144	/ ft
8-inch diameter	$160	/ ft
10-inch diameter	$170	/ ft
12-inch diameter	$180	/ ft
16-inch diameter	$212	/ ft
20-inch diameter	$260	/ ft
16-inch dia. Retrofit	$10	/ ft
Reservoir Retrofit Cost	$300,000	
Pump Station Upgrades		
Pumps	$50,000	/ ea
Motors	$30,000	/ ea
Appurtenances	$30,000	-
Pressure Reducing Station	$50,000	/ ea
Chlorine Contact Basin		
Walls & Roof	$40	/ sqft
Floor & Baffles	$20	/ sqft
Coating	$10	/ sqft
Appurtenances	$30,000	-
Retrofit (per site)	$25,000	-

Distribution System Costs

The proposed distribution system includes the retrofit of the existing 832-1 potable reservoir and construction of approximately; 5,900 feet of 10-inch, 15,700 feet of 8-inch, and 37,900 feet of 6-inch diameter recycled water main to serve as a backbone system to service the potential customers. The distribution system was sized to accommodate the estimated peak hour demand while meeting District criteria for minimum pressure and maximum velocities and head-losses. The 832-1 Reservoir provides an estimated range of pressure between 85 to 190 psi under the peak hour scenario and, as such, pressure reducing valve(s) should be considered. Table 2-3 summarizes the distribution system facilities and an associated planning-level opinion of cost, including soft costs such as environmental documentation, project management and construction management as well as a contingency reserve fund.

Table 2-3. Distribution System Upgrades and Costs

Upgrade	Unit	Unit Cost	Cost
Distribution Pipeline			
6-inch diameter	37,900 / ft	$144 / ft	$5,457,600
8-inch diameter	15,700 / ft	$160 / ft	$2,512,000
10-inch diameter	5,900 / ft	$170 / ft	$1,003,000
Subtotal			**$8,972,600**
Reservoir Retrofit Cost	1 / ea	$300,000 / ea	$300,000
Pressure Reducing Station	3 / ea	$50,000 / ea	$150,000
Hard Costs			$9,422,600
Soft Costs	20 %		$1,884,500
Contingency	10 %		$942,900
TOTAL			**$12,500,000**

Transmission System Costs

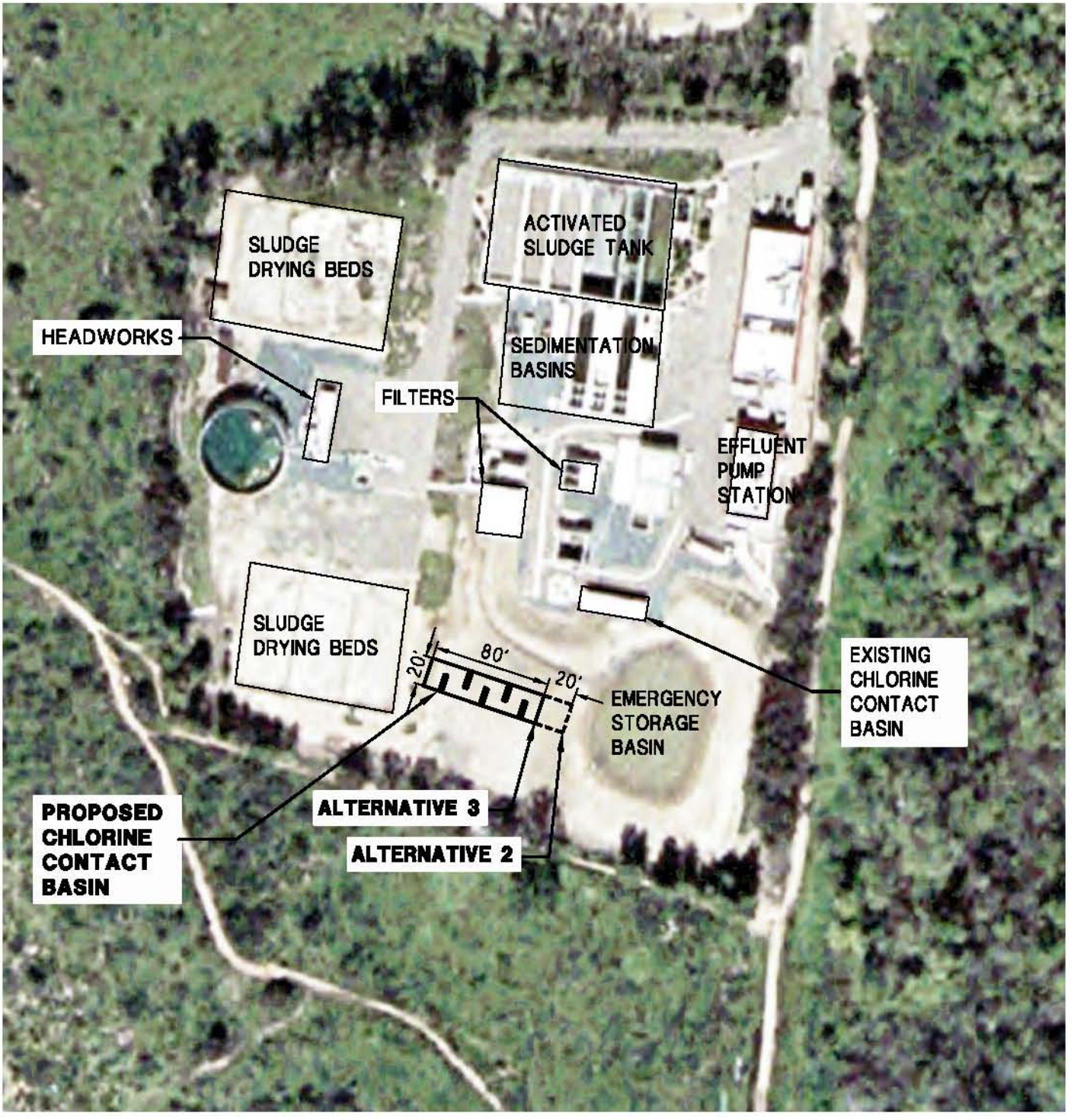
The transmission system will consist of upgrades at the RWCWRF and transmission pipeline to convey plant flows (900 gallons per minute [gpm]) to the 832-1 reservoir. Four alternatives were developed to determine pipeline and chlorine contact basin sizing for the transmission system and were evaluated to determine the most cost-effective approach. These alternatives are described below and associated preliminary opinions of costs are shown in Appendix A.

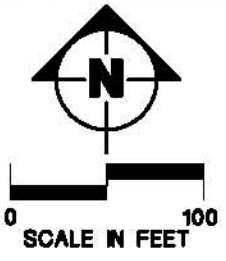
Alternative 1 – **No Chlorine Contact Basin** assumes the retrofit of the existing 16-inch diameter potable main, and sizes the transmission system to eliminate the need for a chlorine contact basin, and as such it takes approximately 90 minutes for the water to travel from the RWCWRF to the 832-1 Reservoir.

Alternative 2 – **New Chlorine Contact Basin** assumes the construction of 8-inch diameter pipeline from the RWCWRF Effluent Pump Station to the 832-1 Reservoir, which requires the construction of an estimated 150,000 gallon Chlorine Contact basin. Figure 2-2 provides a schematic of how this facility might fit on the existing RWCWRF site.

Alternative 3 – **New Smaller Chlorine Contact Basin** assumes the construction of 8-inch diameter pipeline from the RWCWRF Effluent Pump Station to the existing 16-inch diameter potable main, which requires the construction of an estimated 120,000 gallon Chlorine Contact basin.

Alternative 4 – **Existing Chlorine Contact Basin** assumes the construction of an 8-inch and a 16-inch diameter pipeline from the RWCWRF Effluent Pump Station to the existing 16-inch diameter potable main, utilizing the existing chlorine contact basin.





R. W. CHAPMAN WATER RECYCLING FACILITY (RWCWRF) SITE PLAN

FIGURE 2-2

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The proposed distribution system cost is estimated to be approximately $12.5 million and the alternative transmission systems range in cost from $1.97 million to $2.58 million. The selection of the transmission system alternative is dependent on DPH approval of the proposed approach for achieving the required chlorine contact time. At this level of planning, it is estimated that the project facilities costs will be in the range of $14 million to $15 million.

On-Site Retrofit Costs

The cost of retrofitting an existing irrigation system at a customer's site can vary widely depending on the size of the irrigated area, extent of the existing irrigation system, the configuration of the system and the number of potable water connections that have to be re-plumbed. This cost is typically borne by the customer, who would expect to see a return on investment. Assuming a cost of $25,000 and a water rate savings of $100 per acre foot (AF), a customer would have to use approximately 50 AFY to achieve a payback period of 5 years. The San Diego County Water Authority is offering its member agencies $250/AFY subsidies ($12,500 for a site that uses 50 AFY) for recycled water retrofit projects, which could be used to offset these on-site costs.

The cost of recycled water to the customer following the retrofits is 85 percent of the potable water rate. The District is in the process of adopting tiered rates for both potable and recycled water customers to promote conservation. The rates are based on meter size and water use each month. Drought rates may be implemented by the District's Board of Directors in the event a drought stage is declared by the Board. Recycled water rates for large users (>34,000 gallons per month or 45 units) may increase, but will remain at 85 percent of the potable rate.

Regulatory Compliance and Reporting System Improvement Costs

The regulatory compliance system will consist of upgrades or replacement of the water quality and effluent data management system that will provide both operational information and data, as well as, effluent water quality data control, compliance and reporting. The recent and anticipated changes in the RWCWRF's Master Reclamation Permit will likely determine the timeline and urgency of the modification to the system. The collection of additional effluent monitoring data indicates that substantial benefits would be obtained from the upgrade or replacement of current systems.

The implementation of an updated regulatory compliance and reporting system is mostly independent of the distribution and transmission system alternatives presented above. Preliminary cost estimates for the implementation of upgrades are estimated at approximately $50,000.

Operational Costs

Because the RWCWRF will be producing the same volume of recycled water as it currently does, under the same conditions, no additional operational costs are anticipated. Because the effluent pump station will be pumping primarily to a reservoir at a lower elevation, there may in fact be some energy cost savings associated with reduced pumping requirements.

The District is currently investigating the addition of denitrification facilities at the RWCWRF that will facilitate meeting the current effluent limitation requirements for nitrogen. These facilities are anticipated to also be necessary to meet future anticipated reduction in nitrogen effluent limitations associated with using recycled water in the Middle Sweetwater basin, as discussed further in Section 3. Additional operational costs may be associated with this process.

Watershed Monitoring Costs

As is discussed later, in Section 4 of this report, there is extensive water quality monitoring occurring in the Sweetwater Basin by Sweetwater Authority, the County of San Diego and the State of California. There may, however, be constituents that are not being tested for that may be required by the permitting agencies. It would be beneficial to the District to work with the agencies that are already conducting water quality testing in the watershed to minimize costs. Further discussions with the permitting agencies will be required to determine what additional constituents might be tested for.

Section 3.0
Regulatory Process

There are numerous regulatory statues, codes, laws and policies associated with recycled water use in California. These rules were put in place to ensure adequate water quality for the proposed uses of recycled water and to protect public health by restricting its exposure to the general public. A full description of all applicable regulations and policies associated with recycled water use is provided in Appendix B. This section identifies the key permitting policies that will directly affect the NDRWSDP.

3.1 STATE AND LOCAL WATER QUALITY CONTROL BOARD POLICIES

The California State Water Resources Board (SWRCB) and, locally, the San Diego Regional Water Quality Control Board (RWQCB) institute policies and regulations associated with recycled water use.

- Policy 1: Water quality objectives, beneficial uses, and water quality control plans and policies adopted by the SWRCB and RWQCB shall be an integral part of the basis for water quality management.
- Policy 2: Water shall be recycled and reused to the maximum extent feasible.
- Policy 3: Point sources and nonpoint sources of pollution shall be controlled to protect designated beneficial uses of water.
- Policy 4: In-stream beneficial uses shall be maintained, and when practical, restored, and enhanced.
- Policy 5: A detailed and comprehensive knowledge of the beneficial uses, water quality and activities affecting water quality throughout the Region shall be maintained.

The NDRWSDP would be consistent with Policy 2. The project also would be consistent with Policy 1, Policy 3, Policy 4, and Policy 5, provided that appropriate management practices are in place for recycled water use. This would include control of chemical application and management of runoff at the golf courses, so that recycled water concentrations do not affect water quality objectives for surface waters or groundwater.

The RWQCB is the permitting agency for recycled water projects in the state. These permitting requirements are discussed later in this section.

3.2 CLEAN WATER ACT (CWA)

The Federal Water Pollution Control Act is commonly referred to as the Clean Water Act (CWA). The objective of the CWA is to “restore and maintain the chemical physical and biological integrity of the Nation’s waters” and to make all surface waters ‘fishable’ and ‘swimmable’. CWA Sections 106, 2059j), 205(g), 208, 303, and 305 establish requirements for state water quality planning, management, and implementation in regard to surface waters. The CWA requires that states adopt water quality standards to protect public health or welfare, enhance the quality of water, and serve the purposes of the CWA. Water quality standards are defined as both the uses of the surface (navigable) waters and the water quality criteria (Section 303).

A water quality standard therefore defines the water quality goals for a water body by designating the use or uses and by protecting water quality through antidegradation provisions. The NDRWSDP would have to comply with CWA requirements through the applicable permitting mechanisms issued by the RWQCB.

The Sweetwater Reservoir has been placed on the State's 303(d) list of water quality limited segments as impaired by limited dissolved oxygen levels (2006). Dissolved oxygen impairment is often caused by excessive nutrients. A Total Maximum Daily Load (TMDL) assessment has been scheduled for completion by 2019. The TMDL study would assess sources of the pollutants and assign load allocations to different sources. Because the NDRWSDP could contribute to nutrients within the Sweetwater Reservoir watershed, it may be subject to standard concentrations of dissolved oxygen or nutrient TMDLs, when they have been determined. In practice, compliance with the TMDL requirement could be the review and revision of best management practices for runoff and stormwater. If the NDRWSDP were implemented, the master reclamation permit may be amended to include a schedule and conditions to comply with TMDLs.

3.3 CALIFORNIA WATER CODE (CWC)

The CWC contains provisions that control almost every consideration of water and its use. Division 2 provides that the SWRCB shall consider and act on all applications for permits to appropriate waters. Division 6 controls conservation, development, and use of the State's water resources. Division 7 covers water quality protection and management. The project would have to comply with CWC requirements which are included in permits issued by the RWQCB, including the master reclamation permit.

3.4 STATE AND FEDERAL ANTIDEGRADATION POLICIES

The NDRWSDP would have to comply with antidegradation policies through compliance with the Basin Plan. Water quality objectives must also conform to U.S. Environmental Protection Agency (USEPA) regulations governing antidegradation (40 CFR Section 131.12) and SWRCB Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California), which has been identified as consistent with the federal antidegradation policy. The State policy requires that any water quality degradation must: be consistent with the maximum benefit to the people of the State; not unreasonably affect existing and potential beneficial uses of such waters; and not result in water quality less than described in the Basin Plan.

3.5 NATIONAL ENVIRONMENTAL PROTECTION ACT (NEPA) AND CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

The overall objectives of NEPA and CEQA are to provide full public disclosure of a project and to ensure that environmental factors are considered in the decision making process. NEPA and CEQA require an evaluation of alternatives and adoption of mitigation measures for any project having a significant effect on the environment that cannot be avoided. If significant environmental impacts remain after consideration of feasible avoidance and mitigation measures and alternatives, then the project may still be approved with overriding social and/or economic considerations. Compliance with this requirement will be addressed as part of the Water Resources Master Plan and Programmatic Environmental Impact Report (PEIR).

3.6 CALIFORNIA CODE OF REGULATIONS (CCR)

The project would have to comply with the CCR for use of recycled water, in particular, Title 22 standards. Regulations relating to many facets of water rights and water quality are contained in Title 23 (Waters) Division 3 (Water Resources Control Board) Chapters 3, 4, 15, and 16. Requirements for quality of water for domestic uses and wastewater reclamation criteria are contained in Title 22, Division 4 (Environmental Health).

The Water Recycling Criteria are contained in Sections 60301 through 60355, inclusive, of the CCR, Title 22. The Criteria prescribe:

- Recycled water quality and wastewater treatment requirements for the various types of allowed uses,
- Use area requirements pertaining to the actual location of use of the recycled water (including dual plumbed facilities), and
- Reliability features required in the treatment facilities to ensure safe performance

The project would also have to comply with the CCR Title 17 (Public Health), Division 1 (State Department of Health Services), Chapter 5 (Sanitation, Environmental), Group 4 (Drinking Water Supplies), Article 1&2 (General and Protection of Water System) and implement backflow prevention and prevent cross connections.

The project would comply with CCR Title 22 requirements because recycled water is tertiary treated water and Master Reclamation Permit provisions cover these requirements. The project would have to comply with CCR Title 17 as required and enforced by San Diego County Department of Environmental Health.

3.7 BASIN PLAN – BENEFICIAL USES AND WATER QUALITY OBJECTIVES

The Water Quality Control Plan for the San Diego Basin (9) September 8, 1994 (with amendments adopted through February 8, 2006), otherwise known as the Basin Plan, lists water quality objectives and beneficial uses for surface waters within Southern California - Region 9. Two new amendments have been adopted since this version. One incorporates primarily language and graphics changes (R9-2006-0029) and the other incorporates the revised conditional waivers of Waste Discharge Requirements (WDRs) for specific types of discharge within Region 9 (R9-2007-0104).

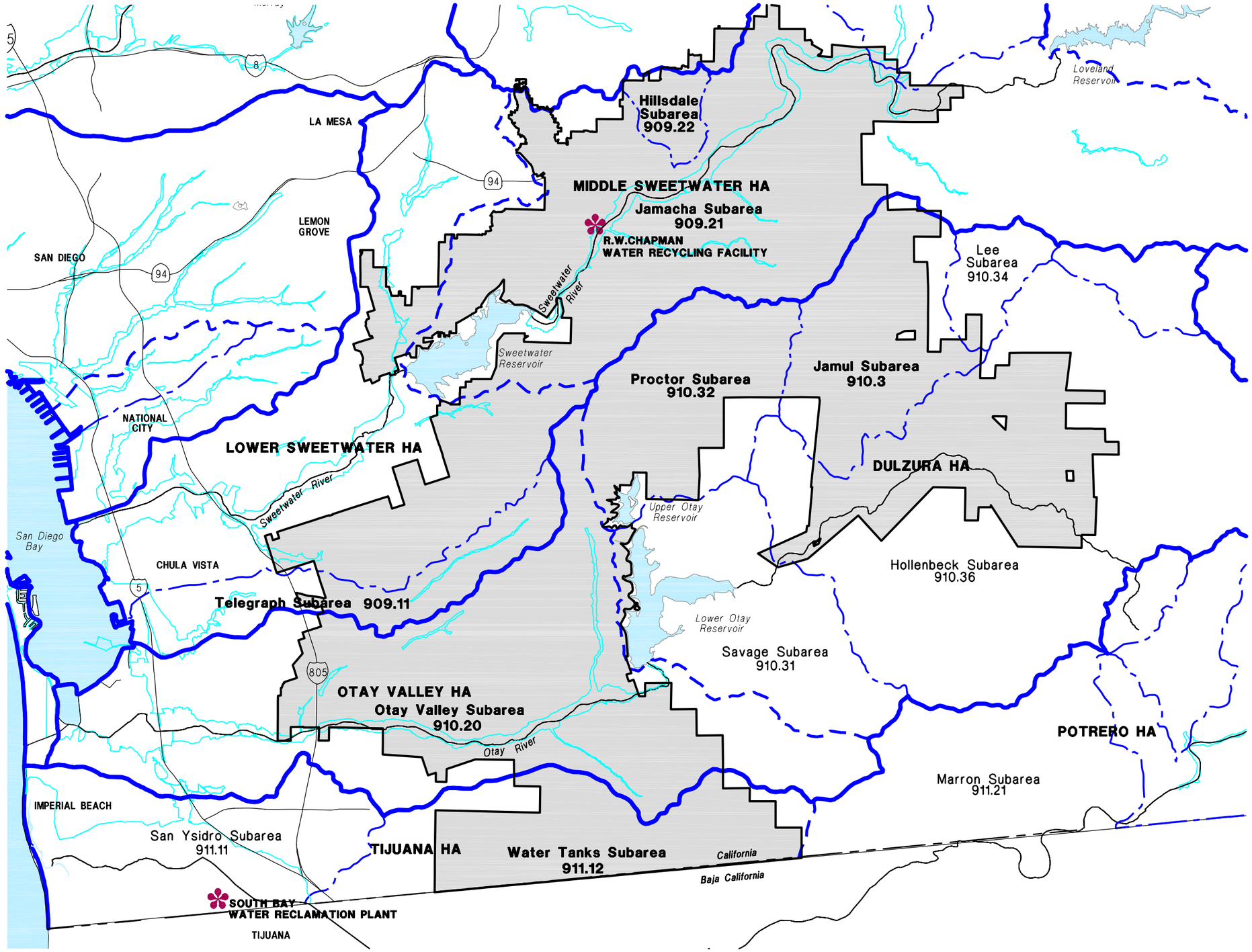
Groundwater is defined as subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated. An aquifer is a groundwater bearing formation sufficiently permeable to transmit and yield significant quantities of water. A groundwater basin is defined as a hydrologeologic unit containing one large aquifer or several connected and interrelated aquifers. In many parts of Region 9, usable groundwater occurs outside of the principal groundwater basins. Accordingly, the groundwater for basin planning and regulatory purposes includes all subsurface waters that occur in fully saturated zones within soils and other geologic formations. Subsurface waters are considered groundwater even if the waters do not occur in an aquifer or an identified groundwater basin.

Controllable water quality factors shall conform to the water quality objectives contained in the Basin Plan. When other factors result in degradation of water quality objectives, then controllable water quality factors shall not cause any degradation of water quality. Controllable water quality factors are those actions, conditions, or circumstances resulting from anthropogenic activities that may influence the quality of waters of the State and that may be reasonably controlled.

Water quality objectives are specified in the Basin Plan for inland surface waters and groundwater (and others). Applicable narrative water quality objectives include:

- Agricultural Supply Beneficial Use – waters shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial uses.
- Floating Material – waters shall not contain floating material, including solids, liquids foams, and scum in concentrations which cause nuisance or adversely affect the beneficial use.
- Oils, Grease, Waxes, and other Materials – waters shall not contain oils, grease, waxes, or other materials in concentrations which result in a visible film or coating on the surface of the water or on objects in the water, or which cause nuisance or which otherwise adversely affect beneficial uses
- Pesticides – no individual pesticide or combination of pesticides shall be present in the water column, sediment, or biota at concentration(s) that adversely affect beneficial uses.
- Taste and Odors – waters shall not contain taste or odor producing substances at concentrations which cause a nuisance or adversely affect beneficial uses. The natural taste and odor of fish, shellfish, or other Regional water resources used for human consumption shall not be impaired in inland surface waters and bays and estuaries
- Toxicity – all waters shall be maintained free of toxic substances in concentrations that are toxic to, or the produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the RWQCB.

The NDRWSDP study area is located within the Sweetwater Hydrologic Unit (909.0). More specifically it is located within the Middle Sweetwater Hydrologic Area (909.20) and the Jamacha Hydrologic Subarea (909.21), as shown in Figure 3-1. Table 3-1 defines the specific water quality objectives applicable to the NDRWSDP.

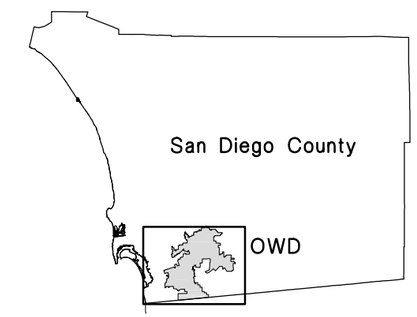


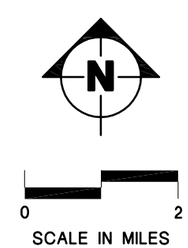
LEGEND

- OTAY WATER DISTRICT
- HYDROLOGIC UNIT BOUNDARY
- HYDROLOGIC AREA BOUNDARY (HA)
- HYDROLOGIC SUBAREA BOUNDARY (HSA)
- FLOODPLAIN 100 YEAR

Source floodplain data: SANGIS

Source well data: SANGIS





HYDROLOGIC SUBAREAS

FIGURE 3-1

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Table 3-1. Water Quality Objectives for Middle Sweetwater Hydrologic Area (San Diego Region Basin Plan)

Pollutant	Maximum	Application and Beneficial Use protected
Unionized Ammonia	0.025 mg/L	Inland surface waters
Fecal Coliforms	200/100 mL : log mean 5 samples per 30 days 400/100 mL : 10% of samples per 30 days	Water contact recreation surface waters (REC-1 beneficial use)
Total Phosphorous	0.05 mg/L	Where it enters standing water body
	0.025 mg/L	In standing water body
Total Nitrogen	Ratio of N:P = 10:1 by weight	In lieu of specific threshold
Dissolved Oxygen	Not less than 5.0 mg/L	Inland surface water: WARM
pH	0.5 SU : change in relation to ambient	Inland surface water: WARM
Phenolic compounds	1.0 ug/L	Municipal and domestic supply waters
Turbidity	0-50 NTU: 20% 50-100 NTU: 10 NTU >100 NTU: 10%	Inland surface waters; by controllable discharges
Trihalomethanes	CCR Title 22 Section 64439	Municipal and domestic supply waters
Toxic Pollutant	40 CFS 131.26 revised at 57 FR 60848	
Inorganic Chemicals	CCR Title 22 Table 64431-A	Municipal and domestic supply waters
Toluene	1 mg/L	Municipal and domestic supply waters
Pesticides	CCR Title 22 table 64444-A	Municipal and domestic supply waters
Radioactivity	CCR title 22 Section 64443	
TDS	1,000 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Chloride	400 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Sulfate	500 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Percent Sodium	60 %	Groundwater: Middle Sweetwater Hydrologic Area
Nitrate	10 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Iron	0.03 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Manganese	0.05 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Methylene Blue Activated Substances	0.5 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Boron	0.75 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Odor	None	Groundwater: Middle Sweetwater Hydrologic Area
Turbidity	5 NTU	Groundwater: Middle Sweetwater Hydrologic Area
Color	15 Units	Groundwater: Middle Sweetwater Hydrologic Area
Fluoride	1.0 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
TDS	500 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Chloride	250 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Sulfate	250 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Percent Sodium	60 %	Surface Water: Middle Sweetwater Hydrologic Area
Nitrate	Concentrations of nitrogen and phosphorous, by themselves, shall be maintained at levels below those that stimulate algae and emergent plant growth. See above.	Surface Water: Middle Sweetwater Hydrologic Area
Iron	0.3 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Manganese	0.05 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Methylene Blue Activated Substances	0.5 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Boron	0.75 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Odor	None	Surface Water: Middle Sweetwater Hydrologic Area
Turbidity	20 NTU	Surface Water: Middle Sweetwater Hydrologic Area
Color	20 Units	Surface Water: Middle Sweetwater Hydrologic Area
Fluoride	1.0 mg/L	Surface Water: Middle Sweetwater Hydrologic Area

Beneficial uses defined in the Basin Plan for the Middle Sweetwater Hydrologic Area (HA) include the following:

- Sweetwater River Jamacha Hydrologic Subarea (HSA) (909.21) beneficial uses include: Municipal and Domestic Supply, Agricultural Supply, Industrial Service Supply, Industrial Process Supply, Contact Water Recreation, Non-Contact Water Recreation, Preservation of Biological Habitats of Special Significance, Warm Freshwater Habitat, Wildlife Habitat, and Rare, Threatened, or Endangered Species.
- Sweetwater Reservoir Jamacha HSA (909.21) beneficial uses are: Municipal and Domestic Supply, Agricultural Supply, Industrial Service Supply, Industrial Process Supply, Contact Water Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat, and Wildlife Habitat. Currently listed as impaired for dissolved oxygen (2006 303(d) list). This is likely a result of nutrient enrichment, but could be because of other factors such as long residence time, lack of mixing, evaporation, and other constituents with high biochemical oxygen demand (BOD).
- Groundwater – Middle Sweetwater HA (909.20) beneficial uses are: Municipal and Domestic Supply, Agricultural Supply, and Industrial Service Supply
- Groundwater – Lower Sweetwater Hydrologic Area (909.10) Telegraph HSA (909.11) beneficial uses are: Agricultural Supply and potentially Industrial Service Supply and Municipal and Domestic Supply
- Groundwater – Lower Sweetwater Hydrologic Area (909.10) La Nacion HSA (909.12) beneficial uses are Municipal and Domestic Supply, Agricultural Supply, and Industrial Service Supply

The NDRWSDP would have to comply with the Basin Plan and assure that beneficial uses of surface and groundwater are maintained. Any revisions to the Master Reclamation Permit would include effluent limitations or other provisions or conditions, deemed by the RWQCB to be protective of beneficial uses, and monitoring programs to ensure compliance and that effluent limitations are effective.

3.8 MASTER RECLAMATION PERMIT

All dischargers of waste to waters of the State are subject to regulation under the Porter-Cologne Act. This includes both point and nonpoint source (NPS) dischargers. All current and proposed NPS discharges to land must be regulated under WDRs, waivers of WDRs, or a basin plan prohibition, or some combination of these administrative tools. For the NDRWSDP, the existing Master Reclamation Permit (Order No. R9-2007-0038) would be revised to include the new use area (the Middle Sweetwater HA) associated with the project. The Master Reclamation Permit contains effluent limitations, operations limitations, and monitoring programs.

The District's Master Reclamation Permit currently provides discharge specifications for municipal water supply protection (Table 8 of Order R9-2007-0038) and requires the District to sample for municipal water supply maximum contaminant levels (MCLs) annually. If constituents are found to be above the allowable concentration, sampling and analysis must increase in frequency to semi-annually and statistical analyses will be performed using the data to determine if the recycled water presents reasonable potential to compromise the water quality objectives for areas with existing or potential domestic/municipal water supply beneficial uses.

If the reasonable potential analysis indicates that the recycled water is not in compliance with the Basin Plan, the permit may be amended to establish effluent limitations based on the MCLs of these constituents.

The first sampling event for this extensive list of constituents was completed on April 30th and May 21st 2008. The data presented in Table 3-2 shows that the District is in compliance with the permit requirements and the Basin Plan. This recent monitoring data also shows that, based on the MCLs, there would be minimal potential impact of any incidental runoff of recycled water on municipal supply water quality in the Sweetwater Basin.

3.9 DEPARTMENT OF PUBLIC HEALTH: PREPARATION OF AN ENGINEERING REPORT FOR THE PRODUCTION, DISTRIBUTION AND USE OF RECYCLED WATER

The current State of California Water Recycling Criteria (adopted in December 2000) require the submission of an engineering report to the RWQCB and the California DPH before recycled water projects are implemented. These reports must also be amended prior to any modification to existing projects. The purpose of an engineering report is to describe the manner by which a project will comply with the Water Recycling Criteria.

Section 60323 of the Water Recycling Criteria specifies that the engineering report be prepared by a properly qualified engineer, registered in California and experienced in the field of wastewater treatment. Recycled water projects vary in complexity. Therefore, reports will vary in content, and the detail presented will depend on the scope of the proposed project and the number and nature of the agencies involved in the production, distribution, and use of the recycled water. The report should contain sufficient information to assure the regulatory agencies that the degree and reliability of treatment is commensurate with the requirements for the proposed use, and that the distribution and use of the recycled water will not create a health hazard or nuisance.

It is anticipated that an amendment to the 2007 *Otay Water District Ralph W. Chapman Water Reclamation Facility Engineering Report on the Production, Distribution and Use of Recycled Water Engineering Report* would have to be prepared for the NDRWSDP to include additional information on the Middle Sweetwater Basin as a recycled water use area.

Table 3-2. RWCWRF Effluent for Municipal Water Supply Maximum Contaminant Levels Compliance

Constituent/ Parameter	Units	Type of Sample	April 30, 2008	May 21, 2008	Drinking Water MCL
Toluene	ug/l	Grab	<0.5		150
1,2,4-Trichlorobenzene	ug/l	Grab	<0.5		70
1,1,1-Trichloroethane	ug/l	Grab	<0.5		200
1,1,2-Trichloroethane	ug/l	Grab	<0.5		5
Trichloroethylene	ug/l	Grab	<0.5		5
Trichlorofluoromethane	ug/l	Grab	<0.5		150
1,1,2-Trichloro-1,2,2trifluoroethane	ug/l	Grab	<0.5		NA
Vinyl Chloride	ug/l	Grab	<0.3		0.5
Xylenes	ug/l	Grab	<1.5		1750
Alachlor	ug/l	Grab	<0.1		2
Atrazine	ug/l	Grab		<0.05	3
Bentazon	ug/l	Grab	<0.5		4 & 18
Benzo(a)pyrene	ug/l	Grab		<0.02	0.2
Carbofuran	ug/l	Grab	<0.5	<0.5	18
Chlordane	ug/l	Grab	<0.1		0.1
2,4-D	ug/l	Grab	<0.1		70
Dalapon	ug/l	Grab	8.5		200
1,2-Dibromo-3-chloropropane	ug/l	Grab	<0.01		0.2
Di (2-ethylhexyl)adipate	ug/l	Grab		<0.6	400
Di (2-ethylhexl)phthalate	ug/l	Grab		<0.6	4
Dinoseb	ug/l	Grab	<0.2		7
Diquat	ug/l	Grab	<0.4		20
Endothall	ug/l	Grab	<20		100
Endrin	ug/l	Grab	<0.01		2
Ethylene Dibromide	ug/l	Grab	<0.01		0.05
Glyphosate	ug/l	Grab	<6.0		700
Heptachlor	ug/l	Grab	<0.01		0.001
Heptachlor Epoxide	ug/l	Grab	<0.01		0.01
Hexachlorobenzene	ug/l	Grab		<0.05	1
Hexachlorocyclopentadiene	ug/l	Grab		<0.05	50
Lindane	ug/l	Grab	<0.01		0.2
Methoxychlor	ug/l	Grab	<0.05		40
Molinate	ug/l	Grab		<0.1	20
Oxamyl	ug/l	Grab	<0.5	<0.5	200
Pentachlorophenol	ug/l	Grab	<0.04		1
Picloram	ug/l	Grab	<0.1		500
Polychlorinated Biphenyls	ug/l	Grab	<0.08		0.5
Simazine	ug/l	Grab		<0.05	4
Thiobencarb	ug/l	Grab		<0.2	70
Toxaphene	ug/l	Grab	<0.5		3
2,3,7,8-TCDD (Dioxin)	pg/l	Grab	<5.0		30
2,4,5-TP Silvex	ug/l	Grab	<0.2		50

3.10 SUMMARY OF REGULATORY COMPLIANCE ISSUES

As noted in the previous sections, the RWQCB and the state and local health departments are the primary agencies associated with permitting the proposed project. Their concerns regarding this project involve the public health and water quality issues specific to the locale and implementation of the project concept. The District's current Master Reclamation Permit complies with these agencies' requirements for surrounding areas, but not the Sweetwater Basin. A revised Engineering Report would be required to amend the District's Master Reclamation Permit. In addition to addressing how the Title 22 chlorine contact requirements would be met, the amendment would focus on use of the recycled water specifically in the Middle Sweetwater Basin and may require adjustments to the effluent quality limitations. A discussion of those issues is provided below.

- Title 22 Chlorine Contact requirements are met in the current RWCWRF treatment process within the 3.4 mile pipeline that discharges to the District's 927-1 Reservoir. By redirecting recycled water to the North District, an alternative means of achieving this Title 22 requirement must be designed. A new chlorine contact chamber is currently proposed to be constructed at the RWCWRF site. The design of this chamber must be detailed in the revised Engineering Report and approved by DPH.

- The 2007 Master Reclamation Permit effluent limitations were specifically established to protect water quality in the basins within the Otay Water District where recycled water would be used. By expanding use into the Middle Sweetwater HA, these effluent limitations must be re-evaluated.

To determine what specific constituents may be of concern in the Middle Sweetwater HA, the beneficial uses and water quality objectives for the Middle Sweetwater surface and groundwater basins were compared with the current recycled water discharge effluent requirements and the beneficial uses and water quality objectives of the permitted basins where recycled water use is currently allowed.

Table 3-3 lists the current recycled water effluent quality and discharge limits from the RWCWRF. The current beneficial uses and water quality objectives for the permitted basins, as well as the proposed North District basin, are listed in Tables 3-4 through 3-6.

Table 3-3. RWCWRF Effluent Characteristics and Discharge Limitations

Constituent	Unit	Effluent Data								2007 Master Recl. Permit Discharge Limits	
		Minimum				Maximum				Monthly Average	Daily Max
		2005	2006	2007[1]	2008 (Jan-Apr)[2]	2005	2006	2007	2008 (Jan-Apr)		
Flow Rate	MGD									NA	1.3
Biochemical Oxygen Demand	mg/l		1	1			4	6		30	45
pH	Unit	6.5	6.7	4.4[3]		7.6	7.6	7.8		6 to 9	6 to 9
Total Dissolved Solids	mg/l	730	710	750		950	888	1040		+400	+450
Chloride	mg/l	169	160	194		220	220	270		+200	+250
Percent Sodium	%	48.7	49	50		51.7	55	54		60	60
Sulfate	mg/l	210	180	200		290	260	310		+100	+150
Total Nitrogen (as N)	mg/l	NA	NA	17.0	15.8	NA	NA	19.9	26.8	9.4	22
Iron	mg/l	0.002	0.020	0.020		0.050	0.041	0.047		0.3	0.4
Manganese	mg/l	0.002	0.002	0.002		0.005	0.014	3.90		0.05	0.06
MBAS	mg/l	0.16	0.05			0.44	0.27			0.5	0.6
Boron	mg/l	0.290	0.310	0.350		0.390	0.410	0.440		2.0	2.5
Fluoride	mg/l	0.21	0.1	0.2		0.28	0.3	0.3		1.0	1.2
Aluminum	ug/l			350	61					-	-
Arsenic	ug/l			1.2	1.1					-	-
Barium	ug/l			81	72					-	-
Cadmium	ug/l			<0.50	<0.50					-	-
Chromium	ug/l			5.9	<1.0					-	-
Lead	ug/l			<5.0	<0.50					-	-
Mercury	ug/l			<0.20	<0.20					-	-
Nickel	ug/l			<5.0	<5.0					-	-
Selenium	ug/l			<5.0	11					-	-
Zinc	ug/l			55	65					-	-
Silver	ug/l			<0.50	0.94					-	-
Coliform	MPN/100 ml									2.2 (7-day avg)	23
Turbidity	NTU									2	5

+ indicates amount allowed over the local drinking water supply levels.
- Data not available
(1) Metals data is for a sample collected on March 6, 2007
(2) Metals data is for a sample collected on April 30, 2008
(3) The pH of 4.4 (April 2007) was an anomaly for the effluent. The next lowest reading reported was 6.1 (March 2007).

Table 3-4. Existing and Potential Beneficial Uses

Existing or Potential Beneficial Uses	Permitted					Proposed		
	Telegraph HSA 909.11	La Nacion HSA 909.12	Otay Valley HA 910.20	Tijuana Valley HA 911.10	Water Tanks HSA 911.12	Sweetwater Reservoir HA 909.21[1]	Sweetwater River HA 909.20 (909.22)	Lower Otay Reservoir HA 910.31[1]
Municipal and Domestic Supply	GW	GW	None	None	GW	SW	SW, GW	SW
Agricultural Supply	GW	GW	SW	None	SW, GW	SW	SW, GW	SW
Industrial Service Supply	SW, GW	SW, GW	SW, GW	None	SW, GW	SW	SW, GW	SW
Water Contact Recreation	SW	SW	SW	None	SW	SW	SW	SW
Non-contact Water Recreation	SW	SW	SW	None	SW	SW	SW	SW
Warm Fresh-Water Habitat	SW	SW	SW	None	SW	SW	SW	SW
Wildlife Habitat	SW	SW	SW	None	SW	SW	SW	SW

[1] Includes Beneficial Uses for Reservoirs and Lakes
SW – existing or potential surface water beneficial use
GW – existing or potential ground water beneficial use
None – No existing or potential surface or groundwater beneficial uses

Table 3-5. Water Quality Objectives for Ground Waters

Constituent	Concentration not to be exceeded more than 10 percent of the time						
	Units	Telegraph HSA (909.11)	La Nacion HSA (909.12)	Tijuana Valley HA (911.10)	Water Tanks HSA (911.12) [1]	Middle Sweetwater HA (909.20)	Lower Otay HA (910.20)
Total Dissolved Solids	mg/L	3,000	1,500	2,500	2,500	1,000	1,500
Chloride	mg/L	750	500	550	550	400	500
Sulfate	mg/L	500	500	900	900	500	500
Percent Sodium	%	60	60	70	70	60	60
Nitrate	mg/L	45	45	-	-	10	10
Iron	mg/L	0.3	0.3	-	-	0.3	0.3
Manganese	mg/L	0.05	0.15	-	-	0.05	0.05
Methylene Blue Active Substances	mg/L	0.5	0.5	-	-	0.5	0.5
Boron	mg/L	2.0	0.75	2.0	2.0	0.75	0.75
Odor	mg/L	None	None	None	None	None	None
Turbidity	NTU	5	5	-	-	5	5
Color	Units	15	15	-	-	15	15
Fluoride	mg/L	1.0	1.0	-	-	1.0	1.0

[1] Water Quality Objectives derived from beneficial uses of overall HA (Tijuana Valley, 911.10)

Table 3-6. Water Quality Objectives for Inland Surface Water

Constituent	Concentration not to be exceeded more than 10 percent of the time				
	Units	Telegraph HSA (909.11)[1]	La Nacion HSA (909.12)[1]	Sweetwater River (909.20)	Otay Valley HA (910.20)
Total Dissolved Solids	mg/L	1,500	1,500	500	1,000
Chloride	mg/L	500	500	250	400
Sulfate	mg/L	500	500	250	500
Percent Sodium	%	60	60	60	60
Nitrogen and Phosphorus	See Note [2]				
Iron	mg/L	0.3	0.3	0.3	0.3
Manganese	mg/L	0.05	0.05	0.05	0.05
Methylene Blue Active Substances	mg/L	0.5	0.5	0.5	0.5
Boron	mg/L	0.75	0.75	0.75	0.75
Odor	None				
Turbidity	NTU	20	20	20	20
Color	Units	20	20	20	20
Fluoride	mg/L	No Value	No Value	1.0	1.0

(1) Water Quality Objectives derived from beneficial uses of overall HA (Lower Sweetwater, 909.10).

(2) Concentrations of nitrogen and phosphorus, by themselves or in combination with other nutrients, shall be maintained at levels below those which stimulate algae and emergent plant growth. Threshold total phosphorus (P) concentrations shall not exceed 0.05 mg/L in any stream at the point where it enters any standing body of water. A desired goal in order to prevent plant nuisances in streams and other flowing waters appears to be 0.1 mg/L total P. These values are not to be exceeded more than 10 percent of the time unless studies of the specific water body in question clearly show that water quality objective changes are permissible and changes are approved by the Regional Board. Analogous threshold values have not been set for nitrogen compounds; however, natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld. If data are lacking, a ratio of N:P = 10:1 shall be used.

In comparing the RWCWRF effluent discharge quality and the water quality objectives of the permitted basins with the Middle Sweetwater Basin objectives, the Middle Sweetwater HA has more conservative objectives for a number of constituents. The differences are noted below:

- TDS concentrations at the RWCWRF are well within the maximum effluent concentration of +400 mg/L over drinking water TDS and much less than the water quality objectives in the permitted basins of 1,000 to 3,000 mg/L. However, TDS water quality objectives in the Middle Sweetwater HA, are significantly lower than in the surrounding basins. It is possible that the groundwater objective of 1,000 mg/L can be met with the current effluent quality limits, however achieving less than 500 mg/L to meet the surface water objective would be impossible, since imported drinking water is close to 400 mg/L. However, there would be no direct discharge of recycled water into surface water; recycled water would be land applied and have to travel overland or through soil to reach surface waters. Neither of which is anticipated. Typically, protecting groundwater is the primary concern when using recycled water for irrigation, and there are multiple levels of protection to divert high TDS water away from the Sweetwater Reservoir, so no significant change to the TDS discharge limit is anticipated.

- Total nitrogen levels at the RWCWRF have been averaging 18.6 mg/L during the first nine months of monitoring under the Master Reclamation Permit (2007-2008). These levels would have to be reduced to meet the monthly average of 9.4 mg/L required by

the Permit. And because the Basin Plan requires a lower nitrogen level in the Middle Sweetwater HA than in the other permitted basins, an even lower nitrogen or nitrate effluent limitation may be imposed by the RWQCB. Although some Master Reclamation Permits do not have effluent requirements for nitrogen when the recycled water is being used for irrigation, assuming it is absorbed and used by the plants and offsets the need for applied fertilizer, the RWQCB has taken a conservative approach in this permit. It should be noted that currently the recycled water effluent limitations for the RWCWRF are for total nitrogen (22 mg/L daily max and 9.4 mg/L 12-month monthly average), not nitrates; although data collected to date indicates that the majority of the nitrogen is in the form of nitrate. As previously mentioned, the District is investigating a denitrification process that would allow the District to meet the current nitrogen effluent limits, and possibly an even lower nitrogen or nitrate limitation that may be imposed to meet the lower nitrate water quality objective for surface water in the Middle Sweetwater basin.

- Chloride levels at the RWCWRF are significantly below permit effluent limitations (Table 3-3). The water quality objective for chlorides in the Middle Sweetwater HA is lower than the other basins, however, groundwater wells historically have high levels of chlorides which could influence surface water levels through exfiltration or use. Chlorides in recycled water could contribute to minor increases in local groundwater concentrations, but they would be within the historic range and are not expected to exceed the water quality objective.

- Sulfate levels at the RWCWRF are also below permit effluent limitations. Although the water quality objective for sulfate in the Middle Sweetwater HA is also lower than the other basins and sulfate in recycled water could contribute to increasing local groundwater concentrations, they would be within the historic range (Table 3-3) and are not expected to exceed the water quality objective.

- As shown in Table 3-6, the Middle Sweetwater HA has more stringent surface water objectives for a number of other constituents. Recycled water could periodically exceed iron, manganese, methylene blue activated substances, and fluoride concentrations based on measured recycled water maximum daily concentrations. However, there would be no direct discharge of recycled water into surface water; recycled water would be land applied and have to travel overland or through soil to reach surface waters. Neither of which is anticipated. Recycled water applications would minimize the potential for runoff or leaching, rendering it unlikely that constituents of concern in recycled water would reach the Sweetwater River. Therefore, although the effluent concentrations exceed some in-stream criteria, recycled water would not likely cause or contribute to exceedance of these in-stream criteria.

In preliminary discussions with the RWQCB and the DPH, regulatory staff has confirmed the findings above and has indicated that no fatal flaws exist in pursuing regulatory permits to allow recycled water use in the North District. Nitrogen was the one constituent that was identified as possibly requiring an amended effluent discharge limit, to meet the Middle Sweetwater HA water quality objective. In order to assess the potential for nitrates to enter the river alluvial valley shallow groundwater and the Sweetwater Reservoir system, the RWQCB uses a simple mass-balance approach and comparison of effluent concentrations to ambient water quality and water quality objectives. To model potential transport would not be practical because of the unknown

nature of transport characteristics. The mass balance model will be further evaluated in the revised Engineering Report.

Overall, the use of recycled water in the Middle Sweetwater HA would simply replace potable and ground water use. With a more carefully managed irrigation system at the recycled water use sites, there would be a decrease in water runoff or leaching. With less runoff and leaching, there should be no additional transport and possibly a reduction of pollutants out of the soil active zone and into the subsurface runoff areas or local shallow groundwater aquifer.

Section 4.0
Watershed Protection

The proposed use of recycled water from the NDWRSDP occurs in areas tributary to the Sweetwater River, upstream of the Sweetwater Reservoir which is used as a municipal water supply by Sweetwater Authority (SWA). SWA obtains 70 percent of their water from local water supplies, including the Sweetwater River and the San Diego Groundwater Formation. The water is treated at the Robert A. Perdue Water Treatment Plant in Spring Valley at the dam of the Sweetwater Reservoir and the Richard A. Reynolds Groundwater Desalination Facility in Chula Vista. SWA is deeply involved in programs to protect its water sources, and continually investigates ways to increase its local supplies of water. Programs include tracking development, watershed outreach and education, urban runoff diversion and treatment, and studies of aquifer storage.

This section provides a physical description of the watershed, an overview of the historic studies and on-going water quality monitoring programs for both groundwater and surface water in the Middle Sweetwater HA, a description of the Urban Runoff Diversion System for the Sweetwater Reservoir, as well as a summary of other facilities and operations taking place within the watershed. This information will serve as background information regarding ambient conditions of the basin prior to recycled water use, and will assist the regulators in defining future recycled water effluent limits that are appropriate for this basin.

4.1 PHYSICAL CHARACTERISTICS OF THE WATERSHED

The Middle Sweetwater HA encompasses approximately 84 square miles and includes the Sweetwater Reservoir and the Middle Sweetwater River. The topography ranges from 400 ft Above Mean Sea Level (AMSL) in the river valley and gently rises on the north and south to 600 and then 800 feet AMSL. The Sweetwater River Valley is approximately 800 feet across at its narrowest and a mile across at its widest. Development in this basin includes suburban communities to the north of the river valley and unincorporated rural areas to the south.

According to the 2007 *Sweetwater and Loveland Reservoir Watershed Sanitary Survey* (2007 Watershed Sanitary Survey), SWA owns and operates the dams at Sweetwater and Loveland Reservoirs and releases water from the Loveland Reservoir to provide input for the Sweetwater Reservoir. Water is withdrawn from the Sweetwater Reservoir for treatment at the Perdue WTP. Because the Sweetwater River is nearly dry most of the year, SWA generally releases from Loveland Reservoir only in the rainy season to minimize water loss to the alluvial deposits.

A 1991 *Water Resources Audit* prepared for the District by NBS Lowry reported that, historically, the highest flow into the Sweetwater Reservoir occurs in March (84.3 cubic feet per second (cfs) mean monthly and 5.6 cfs median daily) and lowest flow occurs in September/August (2.9 cfs mean monthly and 1.3 cfs median daily). The 2007 Watershed Sanitary Survey reports that the United States Geologic Survey (USGS) maintains a stream flow gage near Dehesa along the Middle Sweetwater River. The stream gage has been in operation since October 2005 and was installed by USGS at the request of the SWA. Since October 2005, the highest flows recorded were just over 300 cfs for a two-week period in January 2006. Most of the time, zero flow is recorded at this location.

The suburban community of Rancho San Diego is located within primarily granitic areas on the north side of the river valley, and golf courses are located within the valley alluvium. Based on aerial photography, the granitic soils above the river valley appear to be shallow with visible rock outcrops. Additionally, geologic maps of the region indicate that the underlying bedrock tips towards the Sweetwater River or its tributaries in some locations. This could result in infiltrating water hitting the bedrock faces and running off the bedrock interface into the Sweetwater River or one of its tributaries.

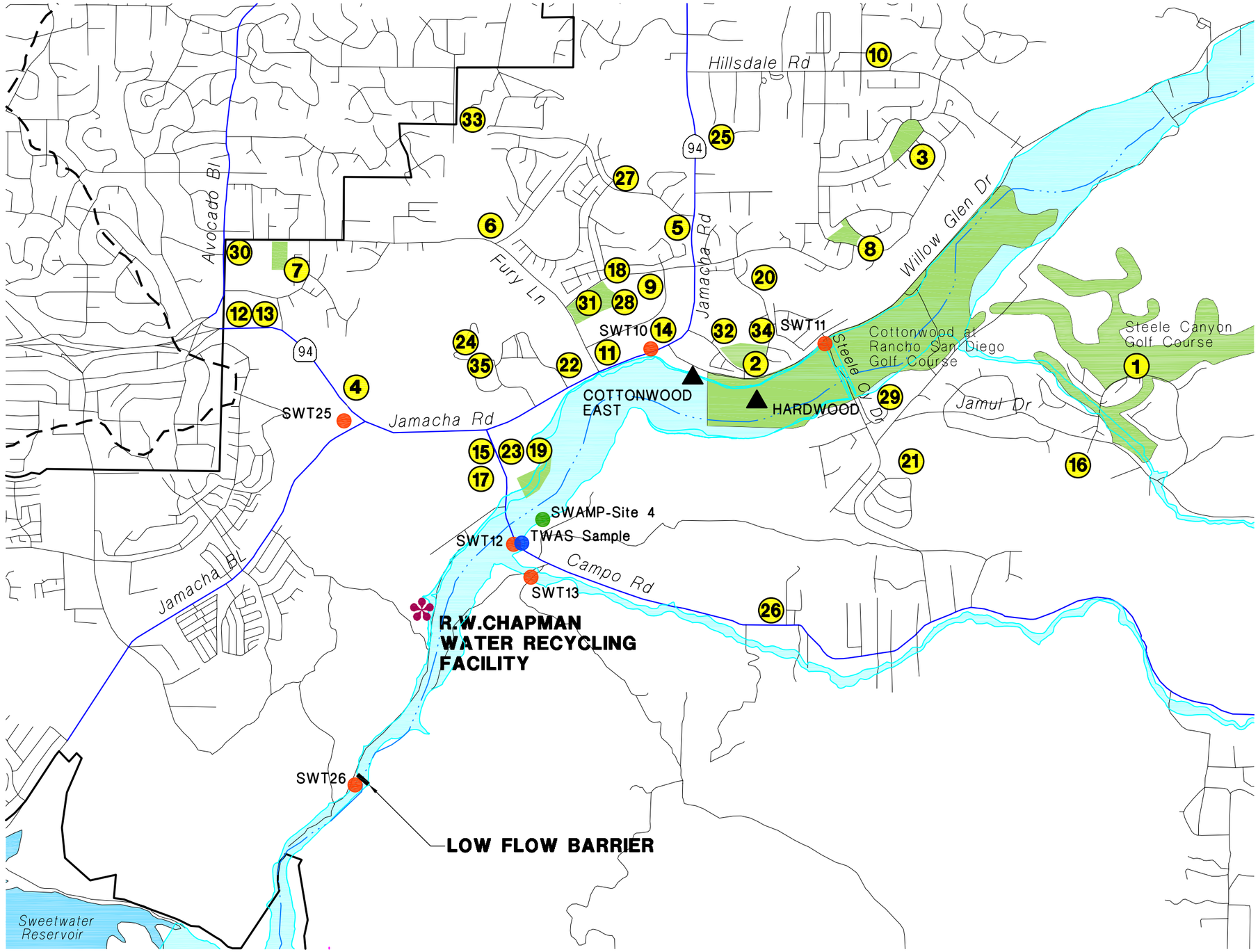
The historical depth to shallow groundwater is about 10 feet deeper in the upper middle Sweetwater River watershed compared to just before the Sweetwater Reservoir. There is some indication that the depth to groundwater has increased from 1979 to 1990. Depth to groundwater is shallow, although at least 10 feet below the ground surface. This is generally considered the minimum separation distance for infiltration stormwater to provide adequate filtering and cleaning of pollutants before reaching the groundwater, as noted in many NPDES permits with infiltration limitations. Additionally, the alluvial nature of the underlying materials in this area would allow for more filtration and pollutant polishing compared to the granitic upland geologic materials. Based on the measured nitrate concentrations downstream of the golf courses in the Water Resources Audit (June 1991), the Sweetwater River valley alluvium shallow groundwater seems to be effective at removing nitrates (see Table 4-1).

SWA's 1995 Watershed Sanitary Survey identified a vertical constriction of the alluvial soil at a point downstream of the District's RWCWRF. The presence of this vertical constriction forces the water in the alluvium to the surface. Surface water quality is of critical concern to SWA, as it is tributary to their municipal water supply. The 2007 Watershed Sanitary Survey identifies numerous sources or potential sources of contaminants in the Middle Sweetwater HA, including urban runoff, leachate from decommissioned landfills and wastewater treatment plants and septic systems. The Sycuan Indian Reservation currently operates a water reclamation plant that produces approximately 77,000 gpd (86 AFY) of recycled water for irrigation on its tribal property in the Upper Sweetwater River area.

4.2 WATER QUALITY MONITORING IN THE WATERSHED

Historic groundwater studies, published by the California Department of Water Resources, as well as sampling data from SWA groundwater wells, were used to characterize water quality in the Middle Sweetwater groundwater basin. In addition, there are numerous surface water quality monitoring stations in this watershed located in the vicinity of the Sweetwater Reservoir and upstream at key locations. The surface water monitoring includes in-stream monitoring conducted by various agencies and for various programs including the municipal storm water permit at a Temporary Watershed Assessment Station (TWAS), the State Water Resources Control Board for the Surface Water Ambient Monitoring Program (SWAMP), and Sweetwater Authority. Also, the County of San Diego's urban runoff monitoring sites located in the river or in the storm drain system or outfalls provides additional data.

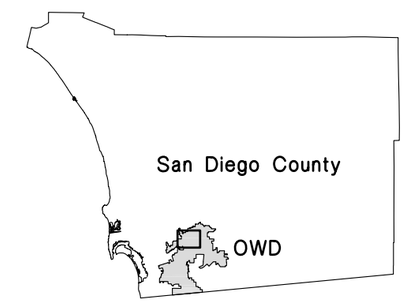
The locations of the monitoring stations and sampling wells are shown on Figure 4-1.

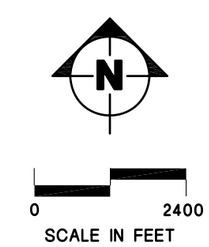


LEGEND

- OTAY WATER DISTRICT
- FLOODPLAIN 100 YEAR
- PROPOSED RW USER
- JAMACHA VALLEY WELL SITE
- SAMPLE SITE-TWAS
- SAMPLE SITE-COUNTY OF SAN DIEGO

NOTE:
SEE TABLE 2-1 FOR RECYCLED WATER USERS.





SWEETWATER BASIN WELLS AND URBAN RUNOFF MONITORING LOCATIONS

FIGURE 4-1

H:\Waterres\100 OtayWD\OWD-NDcncptStdy\Report\DrftRptGraphics\491298-NorthUser Samples.dwg 12/15/08

Groundwater

The information reviewed to prepare this preliminary assessment includes groundwater data from reports dated prior to 1990, including unpublished Department of Water Resources (DWR) data. Data from the local groundwater wells in the alluvium within the stream valley/floodplain was evaluated. From this data, the highest nitrate-N concentrations were found downstream from the golf courses and the highest total dissolved solids (TDS) was found near Sweetwater Reservoir – likely because of evaporation.

General water quality conditions in the Jamacha HSA of the Middle Sweetwater HA are summarized in Table 4-1.

Table 4-1. Historical Groundwater Pollutant Concentrations in Jamacha Hydrologic Subarea Groundwater and Current RWCWRF Discharge Conditions

Pollutant	Units	Concentration				
		Near Sweetwater Reservoir[1]	Down stream of Golf Courses[1]	Overall mean (min-max)[1]	Current Permit Effluent Limitations (monthly avg)[2]	2007-2008 Effluent Concentration (min-max)[2] [3]
TDS	mg/L	2046 (350-600 in upper areas)	1078-1416	793 (354-13900)	1376	730-1040
TN	mg/L				9.4	15.6-26.8
Nitrate-N	mg/L	0.1	16.4-19.0	19.8 (0.3-75.00)	NA	10-26
Chloride	mg/L			188 (83-3420)	440	169-270
Sulfate	mg/L			129 (17-3730)	451	180/290
Depth to GW	ft	20	33-35		NA	NA

NA = not applicable
(1) Middle Sweetwater River System Study Water Resources Audit Volume 1. Prepared for Otay Water District, Sweetwater Authority and San Diego County Water Authority by NBS Lowry, June 1991.
(2) Otay Water District Master Reclamation Permit Order No. R9-2007-0038.
(3) Nitrate data from Jan.07 thru April.08 and Total N from Aug.07 thru April.08 (OWD)

In 1993, the *Middle Sweetwater River System Study Alternatives Evaluation* (Alternatives Study) was prepared to assess alternative means of using recycled water for recharge to the Sweetwater Basin. This is not a concept that the District is currently considering, however the research done regarding the impact of recycled water quality on groundwater quality is of value to this study. Model simulations used for assessing alternatives can give some indication of the change in TDS associated with using recycled water. The Alternatives Study included scenarios with use of recycled water for recharge (about 750 AFY) in the lower portion of the valley system (below Singing Hills Golf Course). Recycled water TDS was assumed to be 850 to 940 mg/L compared to a natural source of recharge water with TDS of 550 mg/L. Comparison of some alternatives yields are provided in Table 4-2.

Table 4-2. Simulated Extracted Groundwater TDS Concentrations

Scenario	SW4(p)-U Recharge with Loveland Res water in upper portion	SW2(r)-L Recharge with recycled water in lower portion	SW3(r)-L Recharge with recycled water in lower portion	Increase between Ambient and Recycled Water Use
TDS	550 mg/L (Ambient) [1]	850 mg/L	940 mg/L	Approximately 300 to 400 mg/L
Pumping Area	Singing Hills GC	Rancho San Diego GC	Rancho San Diego GC	
TDS Concentrations	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Predicted Maximum Monthly	605	2500	2500	1895
Predicted Mean Monthly	500	980	990	480-490
Predicted Median Monthly	430	1360	1370	930-940
Predicted Minimum Monthly	410	980	990	570-580

[1] The 550 mg/L originates from the assumption that ambient levels are the average TDS levels for raw Metropolitan Water District imported water.

It should be noted that direct recharge of 750 AFY of recycled water would not occur under the project proposal; recycled water would simply replace potable water for landscape irrigation and most of this water would not reach the stream valley aquifer with the implementation of best management practices. However, the above table provides an approximate indication of the 'worst case' potential for higher salt waters to impact the stream valley aquifer. It should also be noted that the effect of these scenarios on TDS in the Sweetwater Reservoir was modeled to be minimal (increase of 1 mg/L or less).

In addition, more recent well water data (Table 4-3) provided by SWA for well systems at Cottonwood East, Hardwood located in the Middle Sweetwater River area in the Jamacha HSA indicate that the range of TDS levels in the wells (467 to 2834 mg/L) are significantly higher than the RWCWRF effluent TDS levels (730 – 1040 mg/L) and it is unlikely that the controlled use of recycled water will have a detriment to groundwater quality. Similar conclusions can be drawn for chloride levels. Nitrate levels in the RWCWRF effluent currently would have the potential to influence groundwater levels, but effluent nitrate levels are anticipated to be reduced with changes in the plant's treatment processes aimed to meet effluent limitations established in the waste discharge permit.

Surface Water

Surface water quality measurements are available from a variety of sources but there is no consistency in the constituents tested or historical data for any significant period of time. Even with these limitations, several data sets were evaluated to identify any possible concerns and examine the potential effect of recycled water on surface waters. Data for some constituents, sampled in 1979, 1980, and 1988 are available and listed in Table 4-4.

Data on ambient TDS indicates that lower concentrations occur during the winter and after substantial stormwater runoff or releases from the Loveland Reservoir, while higher concentrations occur during the dry season and when flows are low. This is expected because evaporation during the dry season will concentrate salts in the river waters and during the winter wet season, large rainfall events dilute pollutant concentrations in stormwater runoff.

Table 4-3. General Water Quality for Jamacha Valley Basin Wells (SWA)

Source	RWCWRF Recycled Water	Potable Water	Jamacha Valley Cottonwood Well[1]	Jamacha Valley Hardwood Well[1]
Data Date Range	**Jan07-Apr08**	**Jan05-Dec07**	**Jan03-Mar08**	**Jan03-Mar08**
Nitrate (mg/L) Range	10 - 26	<0.5	1.30 - 14.0	1.17-3.51
Nitrate (mg/L) Average	15.7	<0.5	7.24	1.97
Total Phosphorus (mg/L)	0.10 - 2.4	-	-	-
Ortho-phosphate (mg/L)	0.10 - 2.4	-	ND	ND
Conductivity (µS/cm)	1.09 - 1.55	0.59 - 0.99	0.7 - 4.23	3.01 - 4.21
TDS (mg/L) Range	730 - 1040	396 - 602	469 - 2834	2017 - 2821
TDS (mg/L) Average			1145	2361
Chloride	169-270	72 - 220	104 - 756	314 - 755

Note: values for TDS and/or conductivity may be calculated.

(1) Out of 91 data points for the four wells, two were excluded based on quality control check of the data. The two outlier eliminated from the range were points with very high EC levels for Hardwood (27-Mar-2003) at 4,235 S/cm and Cottonwood East (31-Mar-2005) at 8,530 S/cm but corresponding data for the same sample for chlorides, alkalinity and total hardness were very low and did not correspond to the high EC levels.

Table 4-4. Historical Surface Water Pollutant Concentrations in Jamacha Hydrologic Subarea and Current RWCWRF Discharge Conditions

Pollutant	Units	Concentration		
		Near Sweetwater Reservoir[1]	Current Permit Effluent Limitations[2] (monthly avg)	2005-2007 Effluent Concentration
TDS	mg/L	1,042 (330 to1,780)	1376	710 - 1040
Chloride	mg/L	244 (70 to 470)	440	160 -270
Sulfate	mg/L	240 (55 to 465)	451	180 - 310

(1) Middle Sweetwater River System Study Water Resources Audit Volume 1. Prepared for Otay Water District, Sweetwater Authority and San Diego County Water Authority by NBS Lowry, June 1991.

It should be stressed that recycled water would not be directly discharged into the Sweetwater River; the current effluent concentrations column is only provided in Table 4-4 for comparison of existing water quality and effluent water quality.

Surface water quality is currently monitored by the County of San Diego as part of the Municipal Storm Water Permit issued for the San Diego Region by the RWQCB. The County has several urban runoff monitoring stations located in the Sweetwater Basin that it samples annually during the prescribed dry weather period, defined as May 1st through September 30th. The samples are screened for various pollutants using field instrumentation and test kits to measure pH, conductivity, nitrate, ammonia, orthophosphate, and other general water quality parameters. Random samples are collected and sent also for additional monitoring of additional pollutants like detergents, pesticides, oil and grease, and bacterial indicators. The Dry Weather Monitoring Program has been in place for several years and the data collected by the County does provide some general indication of possible pollutant runoff problems including excessive

irrigation runoff. The program's monitoring stations of interest include SWT12, SWT13, SWT11, SWT25, and SWT10 as shown in Figure 4-1.

In general the data indicates that the nitrate levels in urban runoff may be slightly higher than desirable as shown by the average for Station SWT25 (3.22 mg/L) and Station SWT 10 (4.61mg/L) yet these levels are comparable to the range for the Jamacha Valley groundwater between 1.97 and 7.24 mg/L as shown from the data in Table 4-5. Therefore, it is possible that the urban runoff measurements may be representative of various sources including not just anthropogenic activities (landscape fertilization with overwatering, but possibly also groundwater exfiltration). Even though high nitrates are in local groundwater just downstream of the golf courses, this is dissipated to some extent by the time it gets to the Low Flow Barrier or before entering the Reservoir. For example, Hardwood well is less than 8 feet deep and has nitrate levels between 1.17 and 3.51 mg/L and the Low Flow Barrier, during the same period, had nitrate levels between 0.1 and 1.58 mg/L . As noted earlier, nitrate levels of the RWCWRF effluent are higher than desirable but are anticipated to be lower by the time the North District is considered for recycled water use. The modification to the RWCWRF plant, combined with the very stringent BMPs and inspection associated with recycled water use could have a positive effect on urban runoff levels for nitrate and TDS.

Table 4-5. Water Quality Summary

Source	RWCWRF Recycled Water	Potable Water	Jamacha Valley Cottonwood Well	Jamacha Valley Hardwood Well	Low Flow Barrier	Urban Runoff SWT12	Urban Runoff SWT13	Urban Runoff SWT11	Urban Runoff SWT25	Urban Runoff SWT10
Data Date Range	**Jan07-Apr08**	**Jan05-Dec07**	**Jan03-Mar08**	**Jan03-Mar08**	**Jan03-Apr08**	**May05-Sep07**	**May05-Sep07**	**May05-Sep07**	**May05-Sep07**	**May05-Sep07**
Ammonia						0.20-0.40	0.10-0.30	0.10-9.0	0.10-0.30	0.10-0.30
Nitrate Range (mg/L)	10-26	<0.5	1.30-14.0	1.17-3.51	<0.1-1.58	0.23-1.069	1.13-1.92	0.56-0.68	1.92-4.18	0.79-6.21
Nitrate Average (mg/L)	15.7	<0.5	7.24	1.97	0.14	0.93	1.52	0.6	3.22	4.61
Total Phosphorus (mg/L)	0.10-2.4				0.02-0.660					
Ortho-phosphate (mg/L)	0.10-2.4		ND	ND	<0.02-0.20	0.05-0.98	0.05-0.10	0.00-1.88	0.00-0.80	0.10-0.21
Conductivity (mS/cm)	1.09-1.55	0.59-0.99	0.7-4.23	3.01-4.21	1.106-3.56	0.68-2.92	2.60-2.62	0.499-2.03	2.05-2.75	2.32-2.88
TDS Range (mg/L)	730-1040	396-602	469-2834	2017-2821						
TDS Average (mg/L)			1145	2361						
Chloride	169-270	72-220	104-756	314-755	69-579					
Flow (cfs)					0.19-6.20	0.4-28.1	0.0-0.32	0.0-16.7	0.2-0.79	0.0-0.81
Average Flow (cfs)					1.56	5.1	0.21	16.7	0.56	0.45
% Dry					0%	0%	66%	43%	0%	40%

(Data sources vary. Data ranges for RWCWRF recycled water for nitrate, total phosphorous and ortho-phosphate were taken from Jan. thru July 2007. Data conversions were used for TDS and conductivity that assumed a 0.67 factor).

Similar data is available from the Sweetwater Authority for monitoring they conduct at the Low Flow Barrier, described in Section 4.3. The results are comparable to those shown in the upstream sampling locations monitored by the County of San Diego with the possible exception of higher TDS or conductivity levels. As noted earlier, high TDS was speculated by NBS Lowry to be the result of evaporation and concentration, but based on the data summary provided in Table 4-5, it may also be influenced by exfiltrating groundwater that could have levels as high as 2,834 mg/L.

4.3 SWA URBAN RUNOFF DIVERSION SYSTEM

The Urban Runoff Diversion System (URDS) was designed and constructed by SWA to provide a "circle of protection" around the Sweetwater Reservoir from various sources upstream including urban development, the Jamacha and Viejas Landfills, accidental spills, various campgrounds and other sources. The URDS, as described in the 2007 Watershed Sanitary Survey, consists of several lined holding ponds located along the perimeter of Sweetwater Reservoir that serve to capture and divert, as appropriate, urban runoff and first flush storm water which generally has the highest level of pollutants, including salts. Figure 4-2 shows the location of these URSD facilities.

The URDS includes the Low Flow Barrier located immediately adjacent to the north side of Sweetwater Reservoir. This barrier captures the first flush storm flows and low flow runoff before the water enters Sweetwater Reservoir. Water containing high salt levels (TDS) is diverted downstream of the dam into the river where it joins the underground alluvium and becomes a source of supply for the Richard A. Reynolds Groundwater Desalination Facility, which utilizes reverse-osmosis treatment to produce 4 MGD of drinking water from alluvial and groundwater sources. Water with acceptable TDS levels is routed into the reservoir and treated at the 30 MGD Robert A. Perdue Water Treatment Plant. The URDS, as will be demonstrated below, is beneficial to the NDRWSDP since it provides comprehensive structural containment and ultimate protection for the reservoir.

The Middle Sweetwater watershed, which is estimated to be 18 percent urban and 82 percent rural, feeds the east end of the reservoir. The Middle Sweetwater River is comprised of releases from the Loveland Reservoir as well as local runoff between the reservoirs. The local runoff includes a significant contribution from urban runoff. Local drainage into the Sweetwater Reservoir is comprised of urban runoff from the north side of the reservoir and overland flow from the undeveloped south side of the reservoir. SWA began the Phase I URDS in July 1991 to allow for capture and diversion of the urban runoff from the north side of the reservoir, and eventually around the dam and to the Lower Sweetwater River.

The SWA began operation of the Phase II URDS in June 2005. This results in flows from the Middle Sweetwater River being diverted into the URDS collection system at the Low Flow Barrier when the conductivity is greater than 1200 µohms, which occurs most frequently during the dry season but can occur throughout the year. This diversion amount is limited to 50 cubic feet per second (cfs). Runoff is first channeled into a forebay. When electrical conductivity is greater than 1200 µS/cm, water is diverted into the holding ponds. When the water is less than 1200 µS/cm, this water bypasses the diversion system and is allowed to enter the Sweetwater Reservoir. When the capacity of the ponds is reached, the water is directed downstream to the URDS' pump station. From there, the water is pumped over the Sweetwater Dam and into the Lower Sweetwater River.

The total capacity of the four ponds is 120 acre-feet (AF) and they act as temporary wetland marshes where pollutants are removed through bioremediation. SWA commissioned a series of studies in *The Sweetwater Reservoir Urban Runoff Diversion System, University of California at Los Angeles – Draft Final Report, June 1, 2007.* The various studies are aimed at: 1) characterizing the transport pathways of Polyaromatic Hydrocarbons (PAHs), heavy metals and nutrients from different drainage basins into the URDS in order to help identify input sources, 2) assess the potential impacts of storm water runoff on the reservoir water quality, and 3) developing best management practices (BMPs) to protect the reservoirs from the pollution impact. The studies include a review of nutrients and general water quality, and recommendations for six BMPs that target the management and operational practices of the diversion system, the operation and maintenance of the URDS forebays, and other miscellaneous items. The recommendations made in *The Sweetwater Reservoir Urban Runoff Diversion System, University of California at Los Angeles – Draft Final Report,* including that the SWA should continue to operate and optimize the URDS to prevent urban runoff from entering the Sweetwater Reservoir, are being considered by the SWA.

4.4 OTHER WATERSHED FACILITIES AND OPERATIONS

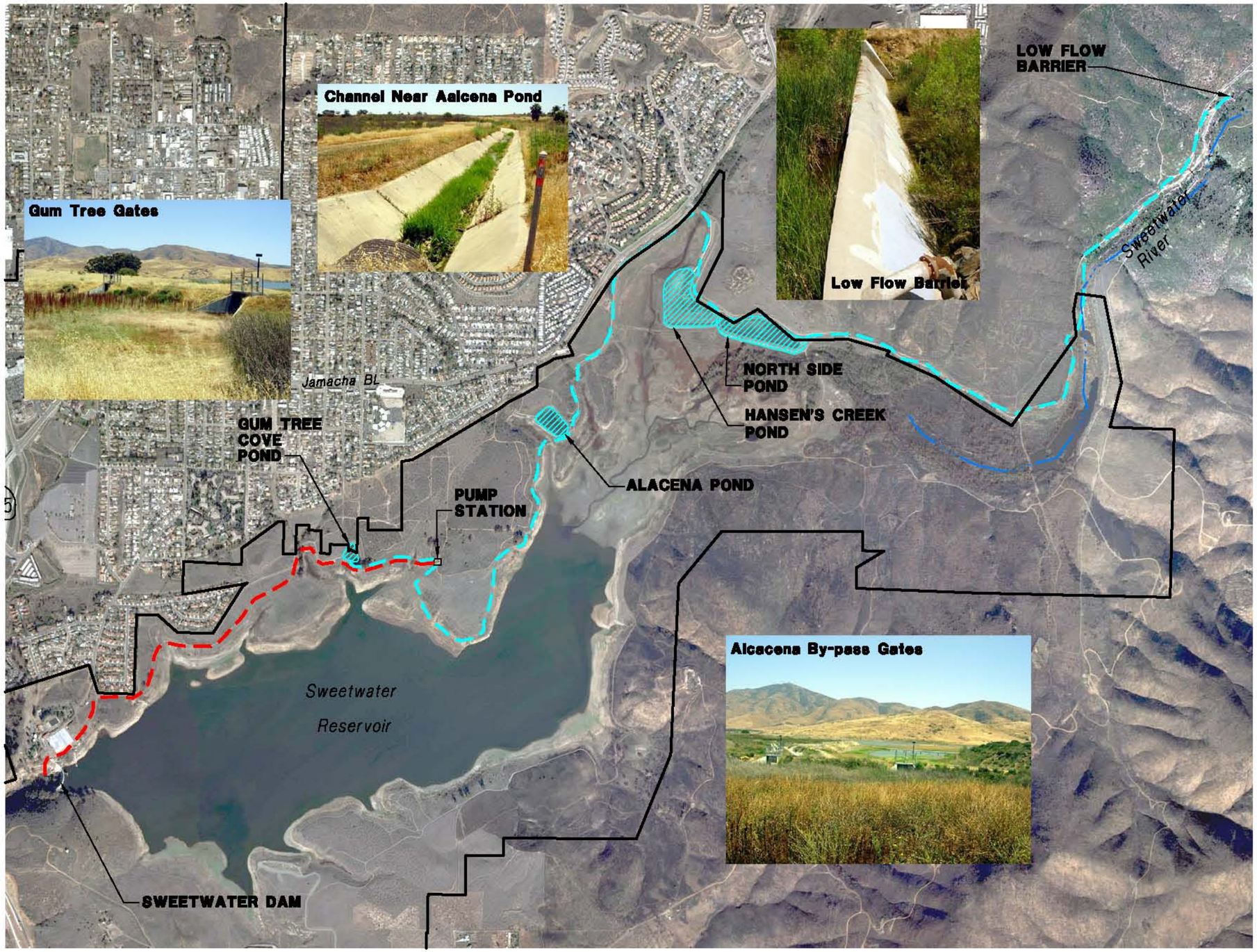
In the Upper and Middle Sweetwater Basins, there are numerous sources of discharges. The following discharges were noted in the 2007 Watershed Sanitary Survey.

Urban Runoff

Urban runoff is a concern in the Upper and Middle Sweetwater watershed because of developing urbanized areas, particularly the communities of Rancho San Diego and Spring Valley. The County of San Diego is the lead permittee for a Phase I Municipal National Pollutant Discharge Elimination System (NPDES) Stormwater Permit (Order No. R9 2007-0001 NPDES No. CAS 0108758). There are no incorporated cities within the Upper and Middle Sweetwater watershed, so all of the unincorporated communities are regulated through the County of San Diego. The 2007 Watershed Sanitary Survey reports that during fiscal year 2005 to 2006, the County of San Diego identified 35 municipal facilities, eight industrial sites, and numerous commercial facilities and construction sites which have the potential to discharge pollutants within the Sweetwater watershed (San Diego Stormwater Co-Permittees, 2007). There are six facilities in the Middle and Upper watershed which are covered under the State Water Resources Control Board General Industrial Activities Storm Water Permit. Generally, the sites are in compliance or have incurred minor violations related to monitoring or reporting.

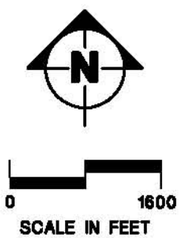
Decommissioned Landfills

The Jamacha landfill is an inactive Class III municipal solid waste landfill located approximately 700 feet northwest of the Sweetwater River, just north of the RWCWRF. The landfill accepted an estimated 1.8 million tons of residential waste, commercial refuse, and non-decomposable inert solids during its operation from 1960 to 1978. Groundwater flow from this site is generally southeasterly toward the river valley. The Jamacha landfill is regulated by the RWQCB under Order 94-164 and, under that order, the County of San Diego currently monitors 16 groundwater monitoring wells and 14 piezometers semi-annually. Historical monitoring data shows elevated levels of TDS, chloride, iron, manganese and arsenic in select monitoring wells.



LEGEND

- OTAY WATER DISTRICT
- EXISTING FORCE MAIN
- EXISTING GRAVITY PIPELINE
- EXISTING URDS POND



SWEETWATER RESERVOIR URBAN RUNOFF DIVERSION SYSTEM

FIGURE 4-2

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Based on these monitoring results, the RWQCB imposed a Cleanup and Abatement Order 99-42 on the County of San Diego. The Order identified chloride, and TDS as constituents of concern (COCs) at the Jamacha landfill site because detected concentrations exceeded water quality objectives of the Basin Plan (800 mg/L for chloride and 3,500 mg/L for TDS in groundwater). As part of the Cleanup and Abatement Order 99-42, the County of San Diego initiated a Phase II Evaluation Monitoring Program (EMP). A Phase II EMP has been implemented to complete the site characterization, assess potential impacts to human health and the environment, and evaluate corrective action alternatives to mitigate potential impacts. The September 2006 Report of Waste Discharge states, "constituents from the landfill are diluted by flow from the Sweetwater River and the watershed on the other side of the river. These mechanisms prohibit the migration of any landfill constituent across the Sweetwater River." Therefore, although groundwater has been impacted by the landfill, the report concluded that the Sweetwater River is not impacted. However, the 2007 Watershed Sanitary Survey noted that the vertical constriction identified in the 1995 Watershed Survey may provide a pathway for contamination of the alluvium from the Jamacha landfill to reach the Sweetwater River.

Wastewater Treatment Plants and Septic Systems

Located in the Upper Sweetwater Basin, both the Viejas and Sycuan Tribes have wastewater treatment plants which serve their respective casinos and tribal population. These two wastewater treatment plants and the Alpine RV Resort and the Ma Tar Awa RV Park, owned by the Viejas Tribe, are not required to have permits with the Regional Board because they discharge recycled water to Indian owned lands where it is used for irrigation on the reservation. Occasionally, the effluent is sent to infiltration basins where it recharges the groundwater. The Descanso Water Pollution Control Facility, also located in the Upper Sweetwater Basin, is located near the intersection of Jatapul Valley Road and Interstate 8. The treated effluent is disposed of by spray irrigation on 11.6 acres of lawn and shrub areas and by flood irrigation of trees located in the facility.

The 2007 Watershed Sanitary Survey reports numerous residential lots, parks and campgrounds that operate septic systems in the Upper and Middle Sweetwater basins. The exact number and precise locations are not clearly documented, but the County of San Diego does track the systems that have experienced repairs and maintenance, as shown in Figure 4-3. The cluster of septic systems in this figure, based on data from November 2002 through May 2006, provides a general idea of the location and density of the systems. County Department of Environmental Health (DEH) staff stated that more complaints are received regarding older septic systems. This is because the lots in the older areas are smaller, and there is less disposal system area. Older systems are also more difficult to repair and were not designed to today's criteria. The County DEH does not have the time and resources to inspect septic systems routinely. They inspect systems on a complaint-basis only. If a system fails, the County responds and requires the owner to fix the failed system.

According to the National Water Quality Inventory Report to Congress in 1996 (USEPA 841-R097-0008), on-site septic systems currently constitute the third most common source of groundwater contamination. In 1996, the Clean Water Needs Survey Report to Congress identified 500 communities nationwide having failed septic systems that have caused public health problems. To avoid possible public health issues locally, an inventory of septic systems in the Middle Sweetwater HA and a feasibility plan to connect these areas to municipal sewer

collection systems may be warranted. Eliminating septic systems in the area may reduce nutrient loadings and could possibly be used as an offset to any impact a recycled water program may have on water quality in the basin and may be a means for improving the overall conditions in the basin.

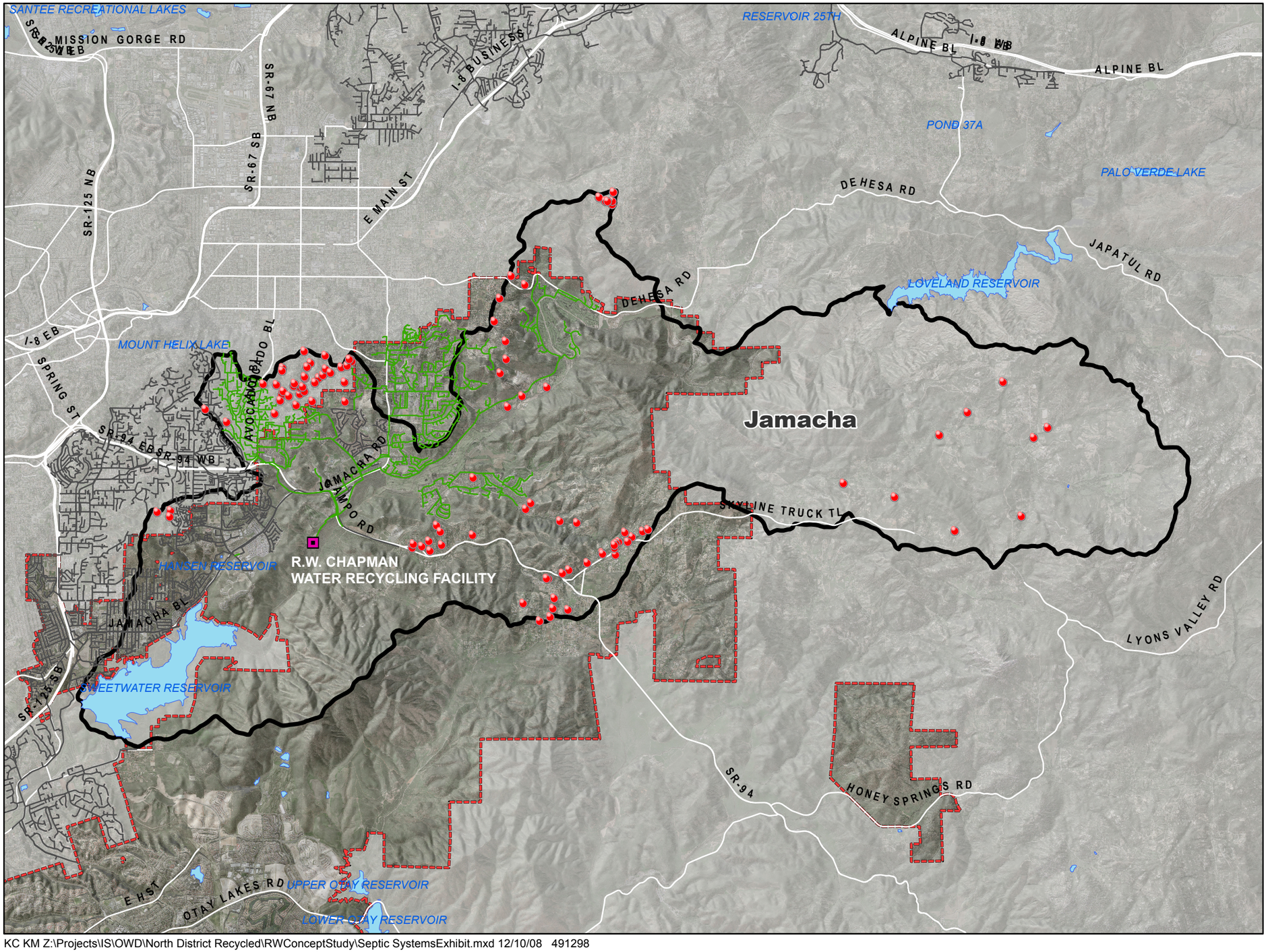
As there are no direct wastewater discharges to the Sweetwater River, and the wastewater pump stations within the watershed have had no spills within the last five years, no source water protection activities to address wastewater were recommended in the 2007 Watershed Sanitary Survey.

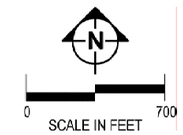
4.5 SUMMARY OF FINDINGS

As presented in this section, water quality monitoring data has provided a general understanding of the conditions in the watershed. Permitting the North District to expand recycled water use into this service area appears to be feasible based on the watershed conditions and the review of historical water quality data from groundwater and surface water. A variety of feasible mitigation and monitoring activities can be devised if conditions are deemed to be marginally acceptable or require a “safety factor.”

The issues identified through the review of the data presented in this section are:

- TDS levels in recycled water are in the range of (natural) source water and are not anticipated to have an impact on the watershed, groundwater or surface water.
    - Shallow groundwater wells located in the lower part of the Middle Sweetwater River basin have higher TDS levels and have a wider range of values than recycled water from the RWCWRF.
    - TDS, chloride and sulfate levels in surface water near Sweetwater Reservoir have a wider range and generally higher values than recycled water produced at the RWCWRF.
- The historical data (1989-2008) indicates concerns have focused on nitrate levels primarily in local, shallow groundwater wells used for landscape irrigation at golf courses located upstream of the Sweetwater Reservoir.
- Current nitrate levels in the RWCRWF need to be lowered to current effluent limits to be protective of beneficial uses and maintain or possibly improve watershed conditions. Urban runoff and groundwater sources have nitrate levels within the range of the values anticipated for the RWCRWF (less than 9.4 mg/L) once treatment and operational modifications are in place.
- Urban runoff nitrate levels are generally in the same range and sometimes lower than shallow groundwater levels. The use of recycled water from the RWCRWF with much lower levels in the future will have a positive effect in that nitrate levels may improve with the use of recycled water in lieu of groundwater. Improved management practices in place with the use of recycled water may also have a positive effect on urban runoff levels originating from over-watering practices using potable supplies.
- The Sweetwater Reservoir is protected from high levels of contaminant that may impact the treatment of this local source water for drinking water by the Urban Runoff Diversion System maintained by Sweetwater Authority.





LEGEND

- Otay Water District Boundary
- Jamacha HSA
- OWD Sewer Mains
- County of SD Sewer Mains
- Septic System Repairs

SEPTIC SYSTEM REPAIR LOCATIONS IN JAMACHA HSA

FIGURE 4-3

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- The reservoir receives lower levels of contaminants like TDS, nitrates and other pollutants found in urban runoff, local shallow groundwater (through landscape use at golf courses and exfiltration), and first-flush stormwater because of the operation of the diversion system.
- Various monitoring stations are located throughout the watershed in and near the North District's proposed service area that offer an opportunity for continued monitoring of pollutants of concern and the collection of data to assess the actual impact (positive or negative) from the use of recycled water.
- Other potential sources of pollutants such as decommissioned landfills, wastewater treatment plans and septic systems, and point sources may contribute pollutants throughout the watershed and may provide opportunities for offsets or trading.

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Section 5.0
Public Outreach

The Otay Water District began serving recycled water in the 1960s and currently has one of the largest recycled water distribution systems in San Diego County. The District is firmly committed to expanding the use of recycled water throughout the District in order to minimize its overall demand for potable water. Ultimately, by requiring recycled water use for the irrigation of greenbelt and agricultural areas, filling of artificial lakes, and appropriate industrial and commercial uses, the District anticipates that recycled water will represent about 15 percent of the District's total water supply.

Because the District has developed a successful public outreach and education program regarding recycled water use, District staff generally encounters public awareness and acceptance of its recycled water program. Throughout most of the District, however, recycled water facilities have been installed during development of new communities. The District's Northern Service Area is generally builtout and installation of recycled water facilities will require construction along heavily trafficked areas. Early public outreach will prepare the community for this temporary disruption and educate them on the benefits of providing recycled water to this part of the District. The District's customer opinion survey conducted in May/June 2008 provided a strong indicator that the North District community would be in support of the NDRWSDP. As a potential recycled water customer in the North District, the Water Conservation Garden at Cuyamaca College would be an excellent advocate for the beneficial uses of recycled water in the community.

Public outreach will also be critical in educating the Sweetwater Authority customers, downstream of the proposed project, of any water quality impacts on their water resources and planned mitigation measures. It is critical to the success of the project that the Sweetwater Authority and its potable water customers feel confident that their local drinking water sources will be protected and that interagency agreements can be developed that serve the public's best interests.

5.1 IDENTIFICATION OF STAKEHOLDERS

Stakeholders for this recycled water project were grouped into four categories: Regulatory Agencies; Local Agencies; Potential Customers and the public at large. The roles of these stakeholders are described in the following paragraphs.

Regulatory Agencies

Regulatory Agencies include the RWQCB, the California DPH and the County of San Diego's Department of Environmental Health (DEH). The RWQCB is the permitting agency for recycled water projects in San Diego County and is primarily concerned with maintaining water quality and beneficial uses of local surface and ground water. The California DPH review permit applications, in cooperation with the RWQCB, and is generally concerned with public health issues. Review of recycled water plans and on-site inspections fall to the County DEH.

Local Agencies

The North District is located primarily in the County of San Diego. Along the eastern edge of the Northern District, there are some residential areas that operate domestic wells and septic systems. The Northern District is bounded on the north by both Helix and Padre Dam Water Districts and to the west by Sweetwater Authority. Sweetwater Authority owns and operates Loveland Reservoir, Sweetwater Reservoir, a brackish groundwater desalination facility and deep freshwater wells. Water obtained in each of these areas is influenced by the 230-square-mile Sweetwater River Watershed, a land stretching from the Cleveland National Forest to San Diego Bay. The primary concern of these stakeholders is the protection of their local water resources.

Potential Customers

Potential customers were identified in Section 2.1 and are primarily existing Otay Water District customers who use potable water for irrigation use. These customers include local commercial enterprises, school districts, golf courses, County parks and homeowner associations. In order to use recycled water on site, retrofitting of the proposed sites will be required to disconnect the irrigation system from the potable distribution system. In addition, each of these potential customers must be educated in recycled water use regulations and safety issues.

Water conservation will continue to be high priority for the District, which has put into practice a wide range of cost-effective programs for homes and businesses. The District is also proud to be a sponsor of the award-winning Water Conservation Garden. Located on the campus of Cuyamaca College, this 4.2 acre demonstration garden illustrates the many ways water wise landscapes can be achieved economically and beautifully. The Water Conservation Garden has an exhibit on the beneficial uses of recycled water and staff is often questioned as to why the Garden does not use recycled water. Executive Director Marty Eberhardt has expressed her enthusiasm for bringing recycled water into the North District and using it within the Garden. As a potential customer of the NDRWSDP, the Water Conservation Garden will be an excellent recycled water advocate and education partner within the community.

Public At Large

This group of stakeholders will include local community planning groups, environmental organizations, and other local clubs and associations that express interest in their community. For the purposes of this Phase I of the concept study, only the regulatory and local agencies were contacted directly about this project, for without their support this project cannot move forward. However, Otay Water District did commission a customer opinion and awareness survey between May 16 and June 8, 2008, conducted by Rea & Parker Research Inc. District customers that live near the proposed north district recycled water service area were asked several questions about the use of recycled water. Ninety percent of these customers support expanding recycled water service to their community (70 percent strongly favor and 20 percent somewhat favor). When asked about the use of recycled water for irrigating landscaping along freeways, open space and golf courses, 100 percent of the customers supported the use of recycled water in these areas (82 percent strongly favor, 18 percent somewhat favor). The study was conducted such that its results indicate a 95 percent confidence level, plus or minus 6 percent. In other words, if the entire population of the proposed North District recycled water service area were polled, there is an 89 to 100 percent chance that the results would be the

same. This is an excellent indication that the North District community would support the proposed NDRWSDP. The District's tenet that recycled water is a safe and drought-proof source of water appears to be favorably embraced throughout the District. In the next phases of the NDRWSDP, the District will have the opportunity to further explore public stakeholder support and/or concerns associated with the project through public meetings.

5.2 INTERAGENCY AGREEMENTS

In order for the District to successfully implement a regional project that benefits the District as a whole, and not just the Central and South service areas, the District must work closely with its neighboring agencies. Critical to the success of the NDRWSDP is the District's ability to renegotiate their contract with the City of San Diego to access additional recycled water and to partner with Sweetwater Authority in protecting the quality of their water supply sources in the Sweetwater Basin.

City of San Diego

The *Agreement between the Otay Water District and the City of San Diego for Purchase of Reclaimed Water from the South Bay Water Reclamation Plant* (included in Appendix C) was made and entered into on October 20, 2003. The term of the agreement is 20 years from January 1, 2007. OWD is responsible for payment to the City of San Diego to reserve 6 million gallons per day of plant capacity (up to 6740 acre-feet per year). The District also pays the City Council adopted rate for recycled water and prevailing monthly meter charges. As part of the agreement, the District constructed 6 miles of pipeline and a reservoir to connect their existing distribution system to the existing City recycled water pipeline in Dairy Mart Road.

The City of San Diego is responsible for meeting all federal, state and local health and water quality requirements for recycled water produced at the South Bay WRP and delivered to the District. TDS shall not exceed 1,000 mg/l. The District is responsible for all water handling facilities it owns and operates beyond the point of deliver at Dairy Mart Road. The District is responsible for the quality of the recycled water from the point of delivery. Both agencies agreed to provide mutual cooperative support and assistance in obtaining environmental approvals, including any modifications to the Water Board surface or ground water regulations to allow for the use of City's recycled water within the District.

On or before January 1 of each year, the District may request that the schedule for amount of recycled water to be purchased be revised to increase the quantity of recycled water that the District purchases from the City. If such an adjustment does not adversely impact the City's ability to serve other City customers and Otay has complied with all the obligations of the agreement, the City may not unreasonably reject an adjustment to the schedule. When the 20 year term is up, the City can renew the agreement for an additional period, subject to the payment of additional applicable capacity reservation charges to the City.

The District should begin discussions with the City of San Diego regarding increasing its demand for recycled water from the City's SBWRF and determine what costs might be associated with accessing an increased supply. Based on recent discussions with City staff, it does not appear that the City is actively pursuing recycled water sales within the South San Diego area, and therefore, there should be ample capacity available for sale to the District. This

may be a time consuming process, so it is recommended that these discussions begin as soon as possible.

Sweetwater Authority

As the NDRWSDP has the potential to impact SWA's water supply system, it would be of great benefit for the District to employ measures equal to SWA's in protecting this water resource. In that SWA is supportive of recycled water uses and is pursuing, with the City of Chula Vista and Otay Water District, a study for a regional recycled water facility, SWA's concerns will likely be protection of the basin and not recycled water use in general. The findings of this report will be reported directly to SWA staff and subsequently to their Board of Directors for input. A memo of understanding associated with the pursuit of this project may alleviate any concerns that the Board has regarding the District's intent and ability to protect water quality in the watershed. It is the District's intent that input from SWA staff and Board will be incorporated into the second phase of this study.

Section 6.0
Implementation Plan

The implementation of the NDRWSDP is dependent on the opportunities and constraints of the project, as identified in the previous chapters and summarized below. Based on this discussion, an implementation plan is presented at the end of this section, identifying the steps required to proceed with the NDRWSDP.

6.1 OPPORTUNITIES

The driving force for the NDRWSDP is the opportunity to reduce demand on the potable water system by expanding use of available recycled water within the District. The regional potable water supply is experiencing escalating shortages due to drought and court-mandated cutbacks in regional supply delivery systems; therefore the District's ability to tap into alternative local water supplies is critical in maintaining a reliable supply of water. In addition, maximizing the use of available recycled water from local reclamation facilities minimizes treated wastewater discharges to the local ocean outfall. The District can seize these opportunities and continue to protect public heath and promote awareness regarding the beneficial uses of recycled water.

6.1.1 Conserving Potable Water Supply

The Otay Water District is 100 percent dependent on imported potable water which is delivered regionally through the Metropolitan Water District of Southern California and the San Diego County Water Authority. The District's 2005 Urban Water Management Plan estimates that of the 50,000 AFY of water use projected in the District by 2010, recycled water will contribute 4,000 AFY, or 8 percent of the total supply. By expanding the District's service area for recycled water into the North District and taking 700 to 1,500 AFY of existing irrigation uses off of the potable water system, the District could recognize a corresponding 1 to 3 percent reduction in its imported potable water demand. This is equivalent to an additional 35,000 to 65,000 households achieving the District's 20 gallons per day water conservation challenge.

6.1.2 Maximizing Recycled Water Resources

The NDWRSDP provides an opportunity for the District to maximize regional recycled water resources in the South San Diego area. By expanding their distribution system into the North District, the District will draw more recycled water from the City of San Diego's SBWRF. The District's current contract with the City is for 6 MGD. The SBWRF is currently capable of producing 9 MGD (and in the future will be able to produce 15 MGD). With only 6 to 7 MGD of recycled water demand, excess sewage is treated to secondary standards, bypasses the tertiary treatment process, and is discharged to the ocean outfall. By increasing the District's demand, this valuable resource is no longer wasted but treated and beneficially reused.

In incorporating existing infrastructure into the proposed North District recycled water distribution system, the District is again making the best uses of available resources. And by directing recycled water to the North District which is located at a lower elevation than the existing recycled water reservoirs along the ridge between the District's North and Central service areas, pumping costs from the RWCWRF are reduced, which saves both energy and

costs to the District. Using existing infrastructure and reducing energy costs presents another opportunity for the District to maximize its resources.

6.1.3 Protecting Public Health

First and foremost, the Otay Water District believes in providing safe and reliable water supply to its customers. In turn, the District strongly supports the protection of water quality in regional water supplies both within and outside of their District boundaries. Through its 2007 Master Reclamation Permit, the District is allowed to use recycled water in the watersheds of its Central and South service areas. Because one of those watershed basins (La Nacion HSA) has municipal beneficial uses, the Master Reclamation Permit requires the District to annually test the recycled water for potential contaminants similar to those tested for in drinking water. This additional testing requirement provides valuable information regarding any potential concerns.

The District has recently improved the reliability measures at the RWCWRF to allow for immediate and automatic bypassing of recycled water that does not meet Title 22 standards at the plant's discharge point. Although bypassing has never been required, there are now additional measures in place to increase the plant's reliability. The proposed use of recycled water in the Middle Sweetwater Basin would follow the same successful testing protocol and protection through routine testing of the recycled water quality and routine inspection of the recycled water use areas for compliance with the District's rules and regulations.

Also as part of the District's Master Reclamation Permit, which is overseen by the San Diego RWQCB and the California DPH, the District must oversee strict guidelines on the uses of recycled water, implementation and training in best management practices to prevent misuse or runoff of recycled water, and annual cross-connection testing to protect the District's potable water distribution systems. With over 20 years of experience in producing and distributing recycled water, the District has an excellent relationship with the permitting agencies and its recycled water customers.

In preliminary discussions with each of the regulatory agencies who will be associated with permitting the NDRWSDP, none have raised any concerns regarding the feasibility of implementing the proposed project in the North District. With appropriate treatment and best management practices in place, these agencies acknowledge that recycled water in the North District could be a regionally beneficial project.

6.1.4 Protecting Sweetwater Reservoir

With recycled water quality ensured at the source, and rules and regulation for recycled water use enforced at the proposed customer sites, there is extremely low risk of recycled water runoff or infiltration reaching the surface or groundwater in the Sweetwater River basin. Typically, customers who retrofit their irrigation systems to accommodate recycled water become better water stewards, i.e. they tend to use less water and use it more efficiently. However, even incidental runoff or infiltration could be of concern to a sensitive watershed. As the Sweetwater River basin is tributary to the Sweetwater Reservoir, used by the SWA as a source of drinking water, it is important that this water supply be protected. With good reason, Sweetwater Authority has implemented significant measures to protect this valuable resource.

As discussed in Section 4, SWA employs an extensive urban runoff interception and diversion system to protect the Sweetwater Reservoir and minimize the impact of urban contaminants on its drinking water supply. The URDS captures first flush storm flows and dry weather urban runoff before the water enters the Sweetwater Reservoir. The level of monitoring and surveillance of the watershed performed by SWA provides the Otay Water District with opportunities to partner with SWA to monitor any benefits and impacts of increased recycled water use in the watershed. The URDS has proven to be an effective barrier and would continue to work as such for any incidental recycled water incursion.

6.1.5 Stakeholder Outreach

As noted in Section 5, the District has been very successful in developing a recycled water program within its service area and educating its customers on the value of conserving potable water resources. The public at large has indicated in annual surveys that they support the use of recycled water in the District. In the June 2008 survey, North District residents supported expansion of service into the North District. The District has partnered with local water agencies, municipalities and regulatory agencies to maximize use of local resources in a safe and reliable manner, and will continue to do so. The District will work closely with Sweetwater Authority to resolve water quality concerns and retain consumer confidence. The District intends to thoroughly explore stakeholder concerns regarding the expansion of recycled water use into the North District through interagency communication and public meetings and their comments and suggestions will be taken into account in the planning of this project.

6.2 CONSTRAINTS

Although there are multiple opportunities associated with the NDRWSDP, there are also a number of constraints that will have to be overcome. Those constraints are discussed below and include water quality concerns associated with impact of nitrogen levels in the recycled water on the watershed and project costs.

6.2.1 Water Quality – Nitrogen Levels

As noted previously in Section 3, the Master Reclamation Permit for the RWCWRF will need to be updated to include the North District service area. As part of that update, the San Diego RWQCB will assess the Middle Sweetwater HA beneficial uses and water quality objectives to arrive at the appropriate effluent limitations, applied to the plant's recycled water (effluent), to be protective of those beneficial uses and allow for water quality objectives in the receiving waters to be maintained.

In some instances, the Middle Sweetwater HA (groundwater water) and Sweetwater River (surface water) water quality objectives are more stringent than the current services areas in the South District which includes La Nacion HSA (having the most stringent limits in the South District) and a possibility exists that the effluent limits for the RWCWRF might be revised for TDS, chloride, sulfate and nitrate. TDS, chloride and sulfate levels in recycled water are in the range of the natural source water in the basin, and are not anticipated to have an impact on the watershed. Presently, the concern or constraint is limited to total nitrogen or nitrate levels in the RWCWRF effluent since they are not meeting the current 12 month average (calculated from monthly samples) of 9.4 mg/L. The District is currently addressing this new nitrogen level requirement and is in the process of preparing an action plan that is anticipated to include

modifications to the treatment process, a schedule to implement the changes and cost estimates for budgeting purposes.

Effluent limitations may need to be revised to serve recycled water in the North District. If the revised limitations fall within a range that is not technically or economically feasible, a Basin Plan exemption or re-evaluation of the water quality objectives may be necessary for the NDRWSDP to move forward. An important next step includes working with the RWQCB to define the effluent limitations.

6.2.2 Costs

Based on a project concept level of planning, the infrastructure costs for the NDRWSDP are estimated to be in the range of $14 to $15 million dollars. This is a significant cost to the district and will need to be incorporated into the District's capital improvement program. This does not include costs of monitoring or mitigation programs that may be developed.

In addition, the cost to retrofit existing irrigation systems in areas that are significantly built out could prove challenging and costly. For the most part, the District has had the advantage of implementing recycled water programs in new developments. There are sources of grant funding for retrofit projects through the San Diego County Water Authority, the Metropolitan Water District of Southern California and San Diego Gas and Electric. The District will have to decide on how they want to implement a retrofit program, if they are willing to subsidize the costs in order to encourage conversions, or if they plan to put that cost directly on the potential customer.

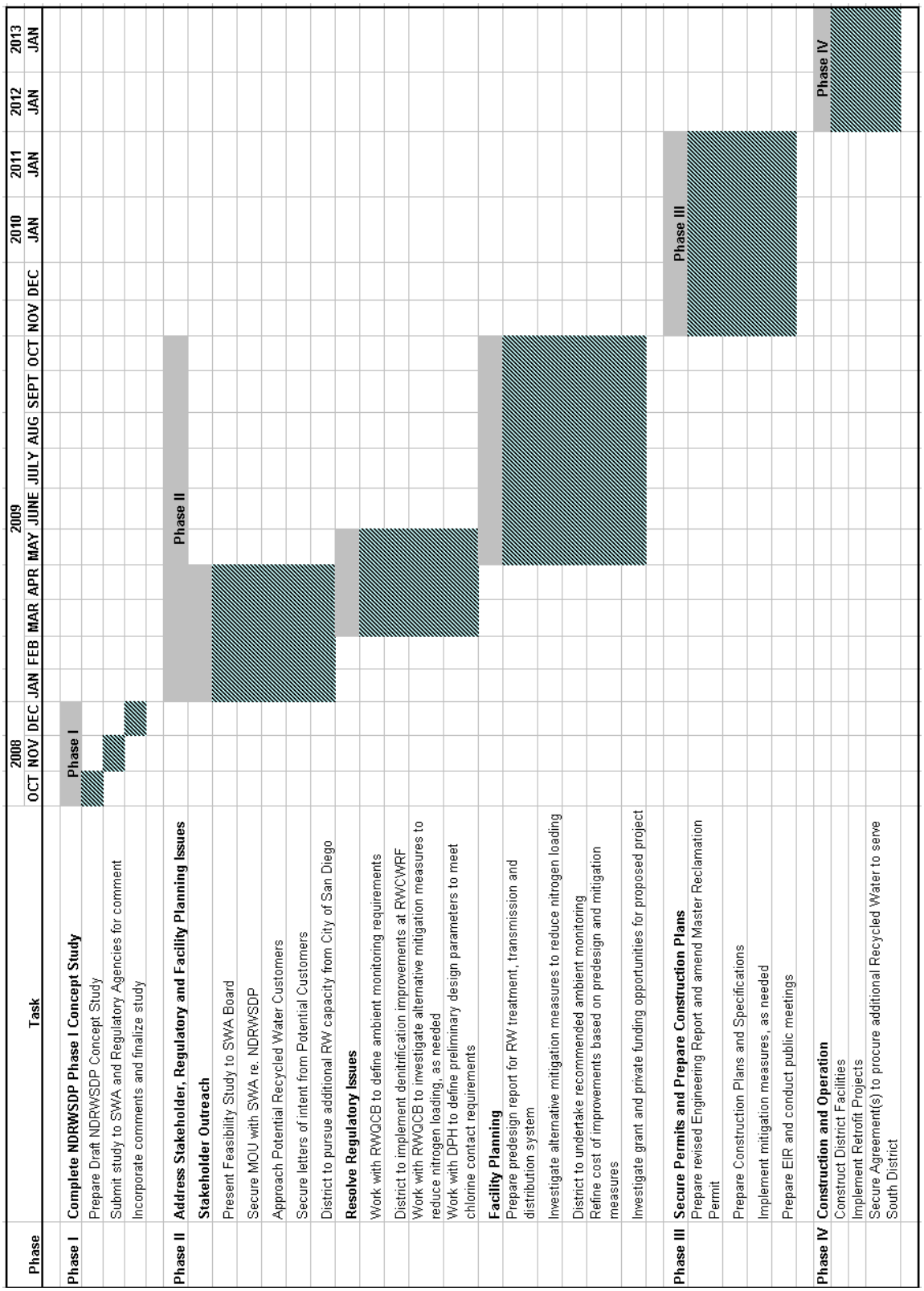
6.3 IMPLEMENTATION PLAN

The NDRWSDP was initially conceived by the District to be implemented in phases. Phase I would produce a concept feasibility study to determine if the proposed use of recycled water in the North District was feasible from a stakeholder and regulatory perspective. Phase II was planned to further investigate any issues identified in the Phase I Concept Study. Phase III would take the project through environmental review, and design. Construction and operation will occur in Phase IV. This section identifies the steps needed to finalize Phase I and proceed with Phase II. A proposed implementation schedule is provided in Figure 6-1.

6.3.1 Phase I

To conclude this phase, it is recommended that this Concept Study be submitted to SWA and regulatory agencies as a draft for their review and comment. Their comments will be incorporated into the Phase I Concept Study. Based on the opportunities and constraints discussed in the preceding sections, it is clear that the issues requiring further refinement fall under the following categories: stakeholder outreach, regulatory issues and facility planning. These issues will be addressed in Phase II of the NDRWSDP.

Figure 6-1. NDRWSDP Implementation Plan and Schedule



6.3.2 Phase II

Phase II of the NDRWSDP includes further investigation of issues identified in the Phase I Concept study as needing further study. The scope of work associated with these issues is identified in the following paragraphs.

Stakeholder Outreach

Critical to the success of the NDWRSDP is the support of the SWA. A substantial amount of watershed and local water quality information has been presented in the Phase I Concept Study. This information indicates that SWA's local drinking water sources are and will continue to be protected. In Phase II, this information will be presented to the SWA Board of Directors to get their input on the proposed project, its impacts and potential mitigation projects. A memo of understanding associated with the pursuit of this project may alleviate any concerns that the Board has regarding the District's intent and ability to protect water quality in the watershed.

Phase II would also include outreach to potential recycled water customers in the North District to directly inform them about the project, the benefits of using recycled water, and the potential opportunities and challenges associated with retrofitting their site to accommodate recycled water use. Ideally, each potential customer would sign a letter of intent to work with the District to bring recycled water to their site. A letter of intent would be beneficial to the District when seeking grant or loan funding for recycled water system improvements.

During Phase II, it is anticipated that the District will begin discussions with the City of San Diego to secure additional recycled water from the SBWRF and to determine what costs might be associated with accessing an increased supply. An amendment to the 2003 agreement for the purchase of recycled water from the City will be required and negotiations may be complex and time consuming, so it is important that these discussion begin early in Phase II.

Regulatory Issues

In Phase II it will be important to work closely with the regulatory agencies to define the site specific parameters that may be imposed to protect water quality in the watershed. Data has been presented that indicates that there may be sufficient information available for some water quality constituents, but that more may be required to determine parameters for other constituents. If additional monitoring is suggested by the regulatory agencies, the number of water quality monitoring stations already in existence in this watershed located in the near vicinity of the Sweetwater Reservoir and upstream at key sites is a great benefit and an opportunity for this project. These sites are strategically located and can be incorporated as part of the monitoring plan for the NDRWSDP to provide basic water quality data or augmented existing monitoring efforts by supplementing them with additional testing either funded or performed by the District.

Two types of monitoring should be considered as the project moves forward: baseline water quality monitoring, and long term water quality monitoring; both are described below.

- Baseline Water Quality Monitoring: The baseline water quality monitoring plan would be designed to be strategic and comprehensive by including spatial and temporal

components for key constituents or pollutants of interest. Sites would be selected from those already identified previously, such as, the County's urban runoff sites and the Low Flow Barrier to monitor current conditions and prepare a dataset for comparison with conditions once recycled water is in use in the North District. The program would be supplemented with inspection records and other information to verify the various efforts undertaken to mitigate urban runoff flows and pollutants during the same time period. Most of the data for this program is likely to be collected by the existing programs, but could also be augmented by the District as part of the NDRWSDP. The Baseline Water Quality Monitoring component would be beneficial to the learning more about watershed conditions and implementation strategies and performed in collaboration with the stakeholders.

- Long term water quality monitoring: Long term water quality monitoring would include the monitoring sites used in the baseline water quality monitoring phase and continue as long as needed to verify a no net change in water quality or impacts from recycled water use. The long term water quality monitoring plan would also need to take into account any changes in urban runoff best management practices that may have a positive impact on watershed water quality. Most of the effort in this program would be undertaken by the municipal storm water permit but could be supported or augmented as appropriate by the District. The program would likely be implemented in a phased approach which may include more frequency sampling in the initial phase and an assessment of the results. The later phases, if necessary, would be tailored to the results of the assessment and based on the recommendations presented in that report.

Also in Phase II, the issue of nitrogen controls will need to be addressed. The District is planning to modify the RWCWRF treatment process to reduce nitrogen levels in recycled water to meet the current total nitrogen effluent limit established in the Master Water Reclamation permit. Effluent data collected in early 2008 indicates that the nitrogen concentration would need to be reduced from an average of approximately 15.7 mg/L to under 9.4 mg/L. The addition of the North District service area is also likely to require the effluent or recycled water to meet this total nitrogen limit or possibly a slightly more stringent effluent limit to be protective of beneficial uses in the Sweetwater River and Sweetwater Reservoir basins. Therefore, the nitrogen reduction measures being considered by the District for the RWCWRF should include both the immediate and the long term need for nitrogen level reductions.

The effluent limits in a revised Master Reclamation Permit required for the NDRWSDP may also take into account and provide some allowance for nitrogen uptake by landscaping. This possible "credit" in the calculation of the effluent limit is commonly used by RWQCB staff when determining the appropriate balance between the protection of beneficial uses and economic consideration (increased treatment costs, energy, waste disposal) and other statewide policies (recycled water use). Discussions with staff will be required to define the total nitrogen limit that may be expected to allow use of recycled water in the Middle Sweetwater HA.

It is proposed that the Phase II of the NDRWSDP include a preliminary effluent limit evaluation by the San Diego RWQCB to determine the long range treatment goals for the RWCWRF in anticipation of permitting recycled water use in the North District. In addition, input from the RWQCB will be sought in identifying alternative mitigation measures if additional nitrogen reductions are required. The following potential mitigation measures may be considered to provide for an option to offset some of the constraints that have been identified above, in case

directly addressing them is determined to be technically or economically infeasible. In other words, the District would be able to provide benefits to the overall water quality and general conditions in the watershed through a variety of actions or activities some of which may not be directly linked to the cause or source, including the added use of recycled water in the North District.

- Wetland Treatment Systems Upstream of Sweetwater Reservoir: A potential mitigation measure that would provide several benefits to the watershed and specifically to Sweetwater Reservoir and drinking water quality consists of establishing wetland treatment systems in strategic locations. The selection of the wetlands would be based on water quality data and treatment goals (reductions) but would include nitrogen, phosphorous and other urban pollutants. This measure is in line with previous recommendations made in the UCLA report (June 1, 2007) that outlined consideration of treatment wetland management as part of the SWA's URDS forebays and holding ponds to reduce pollutants and increase water supply to the reservoir. One additional location that would be considered is upstream of the low flow barrier where a treatment wetland could be constructed for low flow conditions. The treatment wetland goal would be to reduce the pollutants and increase the water supply to the reservoir. In addition, the current use of potable water to supplement flows downstream of the low flow barrier when diversion is taking place could be reduced or eliminated.

- Bringing Septic Systems into Sewer System: As noted in previously in Section 4, the Middle Sweetwater basin has a significant number of septic systems that may be removed if sanitary sewer system infrastructure can be introduced into those areas. The District would consider further studying this potential mitigation measure to provide additional nutrient and bacterial water quality benefits in the watershed. This measure may have a longer timeline for implementation but may provide an economically feasible alternative to other mitigation measures with a very substantial load reduction (credit).

- Nitrogen Management Through Landscaping Uptake: Nitrogen uptake from recycled water use in landscaped areas has not been thoroughly evaluated and the benefits have not been yet been documented and quantified in order to take full advantage of this mitigation measure. The use of recycled water with some minimal amount of nitrogen (nitrate) provides users with the incentive to manage loadings proactively and reduce fertilizers. Improved nitrogen management has the potential to improve watershed water quality and beneficial uses. In turn, the District benefits by receiving allowances for the uptake of nitrogen by landscaping towards the effluent limit determination for the RWCRWF. The District might also consider further evaluating the allowance for nitrogen uptake by various landscaping palates and incorporating the necessary recommendations into future development or redevelopment projects to maximize this benefit.

Input from the California DPH will be necessary in Phase II to define the preliminary design parameters to meet Title 22 chlorine contact requirements. This information will be incorporated into preliminary design of the treatment facility improvements required to implement the NDRWSDP and in the Engineering Report required for an amended Master Reclamation Permit.

Facility Planning

After consensus has been reached with the stakeholders and information gathered from the regulatory agencies, parameters will be set such that preliminary design can begin for the treatment, transmission and distribution system for the NDRWSDP. Preliminary design will refine the sizes of the proposed improvements, alignments of the distribution system and available rights of way, and physically evaluate existing infrastructure for conversion to recycled water use. If mitigation measures have been recommended by the regulatory agencies to achieve water quality limitations, then those measures will be evaluated and developed into an implementable project. Based on the preliminary design, a more refined cost estimate can be developed and opportunities for funding assistance identified.

6.3.3 Phase III

Phase III of the NDRWSDP will include the design of the improvement plans and specifications, implementation of recommended monitoring and mitigation measures, development of the necessary environmental documents, public hearings, preparation of a revised Engineering Report and the application for an amendment to the District's Master Reclamation Permit. These tasks will pave the way for construction and implementation of the NDRWSDP in Phase IV.

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APPENDIX A

Chlorine Contact Improvement Alternatives – Opinions of Cost

Appendix A
Chlorine Contact Improvement Alternatives – Opinions of Cost

Alternative 1 – **No Chlorine Contact Basin** assumes the retrofit of the existing 16-inch diameter potable main, and sizes the transmission system to eliminate the need for a chlorine contact basin, and as such it takes approximately 90 minutes for the water to travel from the RWCWRF to the 832-1 Reservoir. Table A-1 summarizes an associated planning-level opinion of cost, including soft costs such as environmental documentation, project management and construction management as well as contingency for Alternative 1.

Table A-1. Transmission Alternative 1 Preliminary Cost Opinion

Upgrade	Unit	Unit Cost	Cost
Distribution Pipeline			
16-inch diameter	5,400 ft	$212 / ft	$1,144,800
20-inch diameter	500 ft	$260 / ft	$130,000
16-inch dia. Retrofit	1,800 ft	$10 / ft	$18,000
Subtotal			$1,292,800
Pump Station Upgrades			
Pumps	4 ea	$50,000 / ea	$200,000
Motors	4 ea	$30,000 / ea	$120,000
Appurtenances	1 ea	$30,000 -	$30,000
Subtotal			$350,000
HARD COSTS			$1,642,800
Soft Costs	20 %		$328,600
Contingency	10 %		$164,600
TOTAL			$2,136,000

Alternative 2 – **New Chlorine Contact Basin** assumes the construction of 8-inch diameter pipeline from the RWCWRF Effluent Pump Station to the 832-1 Reservoir, which requires the construction of an estimated 150,000 gallon Chlorine Contact basin. Table A-2 summarizes an associated planning-level opinion of cost, including soft costs such as environmental documentation, project management and construction management as well as contingency for Alternative 2.

Table A-2. Transmission Alternative 2 Preliminary Cost Opinion

Upgrade	Unit	Unit Cost	Cost
Distribution Pipeline			
8-inch diameter	7,550 ft	$160 / sqft	$1,208,000
Subtotal			$1,208,000
Chlorine Contact Basin			
Walls & Roof	4,480 sqft	$40 / sqft	$179,200
Floor & Baffles	4,850 sqft	$20 / sqft	$97,000
Coating	11,650 sqft	$10 / sqft	$116,500
Appurtenances	1 ea	$30,000 -	$30,000
Subtotal			$422,700
Pump Station Upgrades			
Pumps	4 ea	$50,000 / ea	$200,000
Motors	4 ea	$30,000 / ea	$120,000
Appurtenances	1 ea	$30,000 -	$30,000
Subtotal			$350,000
HARD COSTS			$1,980,700
Soft Costs	20 %		$396,100
Contingency	10 %		$198,200
TOTAL			$2,575,000

Alternative 3 – New Smaller Chlorine Contact Basin assumes the construction of 8-inch diameter pipeline from the RWCWRF Effluent Pump Station to the existing 16-inch diameter potable main, which requires the construction of an estimated 120,000 gallon Chlorine Contact basin. Table A-3 summarizes an associated planning-level opinion of cost, including soft costs such as environmental documentation, project management and construction management as well as contingency for Alternative 3.

Table A-3. Transmission Alternative 3 Preliminary Cost Opinion

Upgrade	Unit	Unit Cost	Cost
Distribution Pipeline			
8-inch diameter	5,800 ft	$160 / ft	$928,000
16-inch dia. Retrofit	1,800 ft	$10 / ft	$18,000
Subtotal			$946,000
Chlorine Contact Basin			
Walls & Roof	3,680 sqft	$40 / sqft	$147,200
Floor & Baffles	3,850 sqft	$20 / sqft	$77,000
Coating	9,250 sqft	$10 / sqft	$92,500
Appurtenances	1 ea	$30,000 -	$30,000
Subtotal			$346,700
Pump Station Upgrades			
Pumps	4 ea	$50,000 / ea	$200,000
Motors	4 ea	$30,000 / ea	$120,000
Appurtenances	1 ea	$30,000 -	$30,000
Subtotal			$350,000
HARD COSTS			$1,642,700
Soft Costs	20 %		$328,500
Contingency	10 %		$164,300
TOTAL			$2,135,500

Alternative 4 – **Existing Chlorine Contact Basin** assumes the construction of an 8-inch and a 16-inch diameter pipeline from the RWCWRF Effluent Pump Station to the existing 16-inch diameter potable main, utilizing the existing chlorine contact basin. Table A-4 summarizes an associated planning-level opinion of cost, including soft costs such as environmental documentation, project management and construction management as well as contingency for Alternative 4.

Table A-4. Transmission Alternative 4 Preliminary Cost Opinion

Upgrade	Unit	Unit Cost	Cost
Distribution Pipeline			
8-inch diameter	2,010 ft	$160 / ft	$321,600
16-inch diameter	3,760 ft	$212 / ft	$797,100
16-inch dia. Retrofit	1,800 ft	$10 / ft	$18,000
Subtotal			$1,136,700
Chlorine Contact Basin			
Retrofit	1 ea	$30,000 -	$30,000
Subtotal			$30,000
Pump Station Upgrades			
Pumps	4 ea	$50,000 / ea	$200,000
Motors	4 ea	$30,000 / ea	$120,000
Appurtenances	1 ea	$30,000 -	$30,000
Subtotal			$350,000
HARD COSTS			$1,516,700
Soft Costs	20 %		$303,300
Contingency	10 %		$151,700
TOTAL			$1,971,700

APPENDIX B

Regulations and Policies Associated with Recycled Water Use

Appendix B
Regulations and Policies Associated with Recycled Water Use

State and Local Water Quality Control Board Policies

The SWRCB and, locally, the San Diego Regional Water Quality Control Board (RWQCB) institute policies and regulations associated with recycled water use.

- Policy 1: Water quality objectives, beneficial uses, and water quality control plans and policies adopted by the SWRCB and RWQCB shall be an integral part of the basis for water quality management.
- Policy 2: Water shall be recycled and reused to the maximum extent feasible.
- Policy 3: Point sources and nonpoint sources of pollution shall be controlled to protect designated beneficial uses of water.
- Policy 4: In-stream beneficial uses shall be maintained, and when practical, restored, and enhanced.
- Policy 5: A detailed and comprehensive knowledge of the beneficial uses, water quality and activities affecting water quality throughout the Region shall be maintained.

The project would be consistent with Policy 2. The project also would be consistent with Policy 1, Policy 3, Policy 4, and Policy 5, provided that appropriate management practices are in place for recycled water use. This would include control of chemical application and management of runoff at the golf courses, so that recycled water concentrations do not affect water quality objectives for surface waters or groundwater.

The RWQCB is the permitting agency for recycled water projects in the state. These permitting requirements are discussed later in this section.

Clean Water Act (CWA)

The Federal Water Pollution Control Act is commonly referred to as the Clean Water Act (CWA). The objective of the CWA is to "restore and maintain the chemical physical and biological integrity of the Nation's waters" and to make all surface waters 'fishable' and 'swimmable'. CWA Sections 106, 2059j), 205(g), 208, 303, and 305 establish requirements for state water quality planning, management, and implementation in regard to surface waters. The CWA requires that states adopt water quality standards to protect public health or welfare, enhance the quality of water, and serve the purposes of the CWA. Water quality standards are defined as both the uses of the surface (navigable) waters and the water quality criteria (Section 303). A water quality standard therefore defines the water quality goals for a water body by designating the use or uses and by protecting water quality through antidegradation provisions. The project would have to comply with CWA requirements through the applicable permitting mechanisms issued by the RWQCB.

The Sweetwater Reservoir has been placed on the State's 303(d) list of water quality limited segments as impaired by limited dissolved oxygen levels (2006). Dissolved oxygen impairment is often caused by excessive nutrients. A TMDL (Total Maximum Daily Load) assessment has been scheduled for completion by 2019. The TMDL study would assess sources of the

pollutants and assign load allocations to different sources. Because the NDRWSDP could contribute to nutrients within the Sweetwater Reservoir watershed, it may be subject to standard concentrations of dissolved oxygen or nutrient TMDLs, when they have been determined. In practice, compliance with the TMDL requirement could be the review and revision of best management practices for runoff and stormwater. If this project were implemented, the master reclamation permit may be amended to include a schedule and conditions to comply with TMDLs.

California Water Code (CWC)

The CWC contains provisions that control almost every consideration of water and its use. Division 2 provides that the SWRCB shall consider and act on all applications for permits to appropriate waters. Division 6 controls conservation, development, and use of the State's water resources. Division 7 covers water quality protection and management. The project would have to comply with CWC requirements which are included in permits issued by the RWQCB, including the master reclamation permit.

Porter-Cologne Water Quality Control Act
(Division 7 of the California Water Code)

The NDRWSDP would have to comply with the Porter-Cologne Water Quality Control Act (CWC Division 7, Chapter 2, Section 13050) through compliance with the Basin Plan. The Porter-Cologne Water Quality Control Act establishes a regulatory program to protect water quality and to protect beneficial uses of state waters. Section 13000 provides that the quality of all waters of the state shall be protected for use and enjoyment by the people of the state and those activities and factors that may affect the quality of waters of the state shall be regulated to attain the highest water quality that is reasonable. The Porter-Cologne Water Quality Control Act establishes the SWRCB and the RWQCBs as the principle state agencies responsible for control of water quality. The Porter-Cologne Water Quality Control Act defines the federal water quality standards separately as beneficial uses and water quality objectives.

Water quality objectives must ensure the reasonable protection of beneficial uses and the prevention of nuisance, recognizing that it may be possible to change water quality to some degree without unreasonably affecting beneficial uses. The project would have to comply with these requirements in permits issued by the RWQCB, including the master reclamation permit.

State and Federal Antidegradation Policies

The NDRWSDP would have to comply with antidegradation policies through compliance with the Basin Plan. Water quality objectives must also conform to U.S. Environmental Protection Agency (USEPA) regulations governing antidegradation (40 CFR Section 131.12) and SWRCB Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California), which has been identified as consistent with the federal antidegradation policy. The State policy requires that any water quality degradation must: be consistent with the maximum benefit to the people of the State; not unreasonably affect existing and potential beneficial uses of such waters; and not result in water quality less than described in the Basin Plan.

Sources of Drinking Water Policy

The NDRWSDP would have to comply with the Sources of Drinking Water Policy through compliance with the Basin Plan and a Master Reclamation Permit. The Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) prohibits the discharge of toxic substances into sources of drinking water. The SWRCB has defined the term 'sources of drinking water' in Resolution No. 88-63 (Sources of Drinking Water Policy). This policy specifies that, except under specifically defined conditions, all surface and ground waters of the State are to be protected as existing or potential source of municipal and domestic water supply except where certain natural identified conditions preclude such use. Any water body designated with an existing or potential municipal and domestic supply beneficial use is also defined as suitable or potentially suitable as a source of drinking water.

National Environmental Protection Act (NEPA) and California Environmental Quality Act (CEQA)

The overall objectives of NEPA and CEQA are to provide full public disclosure of a project and to ensure that environmental factors are considered in the decision making process. NEPA and CEQA require an evaluation of alternatives and adoption of mitigation measures for any project having a significant effect on the environment that cannot be avoided. If significant environmental impacts remain after consideration of feasible avoidance and mitigation measures and alternatives, then the project may still be approved with overriding social and/or economic considerations. Compliance with this requirement will be addressed as part of the Water Resources Maser Plan and Programmatic Environmental Impact Report (P-EIR).

California Code of Regulations (CCR)

The project would have to comply with the CCR for use of recycled water, in particular, Title 22 standards. Regulations relating to many facets of water rights and water quality are contained in Title 23 (Waters) Division 3 (Water Resources Control Board) Chapters 3, 4, 15, and 16. Requirements for quality of water for domestic uses and wastewater reclamation criteria are contained in Title 22, Division 4 (Environmental Health).

The Water Recycling Criteria are contained in Sections 60301 through 60355, inclusive, of the CCR, Title 22. The Criteria prescribe:

- Recycled water quality and wastewater treatment requirements for the various types of allowed uses,
- Use area requirements pertaining to the actual location of use of the recycled water (including dual plumbed facilities), and
- Reliability features required in the treatment facilities to ensure safe performance

The project would also have to comply with the CCR Title 17 (Public Health), Division 1 (State Department of Health Services), Chapter 5 (Sanitation, Environmental), Group 4 (Drinking Water Supplies), Article 1&2 (General and Protection of Water System) and implement backflow prevention and prevent cross connections.

The project would comply with CCR Title 22 requirements because recycled water is tertiary treated water and Master Reclamation Permit provisions cover these requirements. The project would have to comply with CCR Title 17 as required and enforced by San Diego County Department of Environmental Health.

Basin Plan – Beneficial Uses and Water Quality Objectives

The Water Quality Control Plan for the San Diego Basin (9) September 8, 1994 (with amendments adopted through February 8, 2006), otherwise known as the Basin Plan, lists water quality objectives and beneficial uses for surface waters within Southern California - Region 9. Two new amendments have been adopted since this version. One incorporates primarily language and graphics changes (R9-2006-0029) and the other incorporates the revised conditional waivers of Waste Discharge Requirements (WDRs) for specific types of discharge within Region 9 (R9-2007-0104).

Groundwater is defined as subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated. An aquifer is a groundwater bearing formation sufficiently permeable to transmit and yield significant quantities of water. A groundwater basin is defined as a hydrologeologic unit containing one large aquifer or several connected and interrelated aquifers. In many parts of Region 9, usable groundwater occurs outside of the principal groundwater basins. Accordingly, the groundwater for basin planning and regulatory purposes includes all subsurface waters that occur in fully saturated zones within soils and other geologic formations. Subsurface waters are considered groundwater even if the waters do not occur in an aquifer or an identified groundwater basin.

Controllable water quality factors shall conform to the water quality objectives contained in the Basin Plan. When other factors result in degradation of water quality objectives, then controllable water quality factors shall not cause any degradation of water quality. Controllable water quality factors are those actions, conditions, or circumstances resulting from anthropogenic activities that may influence the quality of waters of the State and that may be reasonably controlled.

Water quality objectives are specified in the Basin Plan for inland surface waters and groundwater (and others). Applicable narrative water quality objectives include:

- Agricultural Supply Beneficial Use waters shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial uses.
- Floating Material – Waters shall not contain floating material, including solids, liquids foams, and scum in concentrations which cause nuisance or adversely affect the beneficial use.
- Oils, Grease, Waxes, and other Materials – waters shall not contain oils, grease, waxes, or other materials in concentrations which result in a visible film or coating on the surface of the water or on objects in the water, or which cause nuisance or which otherwise adversely affect beneficial uses
- Pesticides – no individual pesticide or combination of pesticides shall be present in the water column, sediment, or biota at concentration(s) that adversely affect beneficial uses.

- Taste and odors –waters shall not contain taste or odor producing substances at concentrations which cause a nuisance or adversely affect beneficial uses. The natural taste and odor of fish, shellfish, or other Regional water resources used for human consumption shall not be impaired in inland surface waters and bays and estuaries

- Toxicity – all waters shall be maintained free of toxic substances in concentrations that are toxic to, or the produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the RWQCB.

Table B-1, below, defines the specific water quality objectives applicable to the NDRWSDP.

Beneficial uses defined in the Basin Plan for the Sweetwater Hydrologic Area include the following:

- Sweetwater River Jamacha Hydrologic Subarea (HSA) (909.21) beneficial uses include: Municipal and Domestic Supply, Agricultural Supply, Industrial Service Supply, Industrial Process Supply, Contact Water Recreation, Non-Contact Water Recreation, Preservation of Biological Habitats of Special Significance, Warm Freshwater Habitat, Wildlife Habitat, and Rare, Threatened, or Endangered Species.

- Sweetwater Reservoir Jamacha HSA (909.21) beneficial uses are: Municipal and Domestic Supply, Agricultural Supply, Industrial Service Supply, Industrial Process Supply, Contact Water Recreation, Non-Contact Water Recreation, Warm Freshwater Habitat, and Wildlife Habitat. Currently listed as impaired for dissolved oxygen (2006 303(d) list). This is likely a result of nutrient enrichment, but could be because of other factors such as long residence time, lack of mixing, evaporation, and other constituents with high biochemical oxygen demand (BOD).

- Groundwater – Middle Hydrologic Area (909.20) beneficial uses are: Municipal and Domestic Supply, Agricultural Supply, and Industrial Service Supply

- Groundwater – Lower Hydrologic Area (909.10) Telegraph HSA (909.11) beneficial uses are: Agricultural Supply and potentially Industrial Service Supply and Municipal and Domestic Supply

- Groundwater – Lower Hydrologic Area (909.10) La Nacion HSA (909.12) beneficial uses are Municipal and Domestic Supply, Agricultural Supply, and Industrial Service Supply

The NDRWSDP would have to comply with the Basin Plan and assure that beneficial uses of surface and groundwater are maintained. The Master Reclamation Permit would include effluent limitations or other provisions or conditions, deemed by the RWQCB to be protective of beneficial uses and monitoring programs to ensure compliance and that effluent limitations are effective.

Table B-1. Basin Plan Water Quality Objectives

Pollutant	Maximum	Application and Beneficial Use protected
Unionized Ammonia	0.025 mg/L	Inland surface waters
Fecal Coliforms	200/100 mL : log mean 5 samples per 30 days 400/100 mL : 10% of samples per 30 days	Water contact recreation surface waters (REC-1 beneficial use)
Total Phosphorous	0.05 mg/L	Where it enters standing water body
	0.025 mg/L	In standing water body
Total Nitrogen	Ratio of N:P = 10:1 by weight	In lieu of specific threshold
Dissolved Oxygen	Not less than 5.0 mg/L	Inland surface water: WARM
pH	0.5 SU : change in relation to ambient	Inland surface water: WARM
Phenolic compounds	1.0 ug/L	Municipal and domestic supply waters
Turbidity	0-50 NTU: 20% 50-100 NTU: 10 NTU >100 NTU: 10%	Inland surface waters; by controllable discharges
Trihalomethanes	CCR Title 22 Section 64439	Municipal and domestic supply waters
Toxic Pollutant	40 CFS 131.26 revised at 57 FR 60848	
Inorganic Chemicals	CCR Title 22 Table 64431-A	Municipal and domestic supply waters
Toluene	1 mg/L	Municipal and domestic supply waters
Pesticides	CCR Title 22 table 64444-A	Municipal and domestic supply waters
Radioactivity	CCR title 22 Section 64443	
TDS	1,000 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Chloride	400 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Sulfate	500 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Percent Sodium	60 %	Groundwater: Middle Sweetwater Hydrologic Area
Nitrate	10 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Iron	0.03 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Manganese	0.05 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Methylene Blue Activated Substances	0.5 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Boron	0.75 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
Odor	None	Groundwater: Middle Sweetwater Hydrologic Area
Turbidity	5 NTU	Groundwater: Middle Sweetwater Hydrologic Area
Color	15 Units	Groundwater: Middle Sweetwater Hydrologic Area
Fluoride	1.0 mg/L	Groundwater: Middle Sweetwater Hydrologic Area
TDS	500 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Chloride	250 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Sulfate	250 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Percent Sodium	60 %	Surface Water: Middle Sweetwater Hydrologic Area
Nitrate	Concentrations of nitrogen and phosphorous, by themselves, shall be maintained at levels below those that stimulate algae and emergent plant growth. See above.	Surface Water: Middle Sweetwater Hydrologic Area
Iron	0.3 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Manganese	0.05 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Methylene Blue Activated Substances	0.5 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Boron	0.75 mg/L	Surface Water: Middle Sweetwater Hydrologic Area
Odor	None	Surface Water: Middle Sweetwater Hydrologic Area
Turbidity	20 NTU	Surface Water: Middle Sweetwater Hydrologic Area
Color	20 Units	Surface Water: Middle Sweetwater Hydrologic Area
Fluoride	1.0 mg/L	Surface Water: Middle Sweetwater Hydrologic Area

Master Reclamation Permit

All dischargers of waste to waters of the State are subject to regulation under the Porter-Cologne Act. This includes both point and nonpoint source (NPS) dischargers. All current and proposed NPS discharges to land must be regulated under WDRs, waivers of WDRs, or a basin plan prohibition, or some combination of these administrative tools. In the case of the proposed use of recycled water, the existing Master Reclamation Permit (Order No. R9-2007-0038) would be revised to include the new use area associated with the project. The Master Reclamation Permit contains effluent limitations, operations limitations, and monitoring programs.

The District's Master Reclamation Permit currently provides discharge specifications for municipal water supply protection (Table 8 of Order R9-2007-0038) and requires the District to sample for municipal water supply maximum contaminant levels (MCLs) annually. If constituents are found to be above the allowable concentration, sampling and analysis must increase in frequency to semi-annually and statistical analyses will be performed using the data to determine if the recycled water presents reasonable potential to compromise the water quality objectives for areas with existing or potential domestic/municipal water supply beneficial uses. If the reasonable potential analysis indicates that the recycled water is not in compliance with the Basin Plan, the permit may be amended to establish effluent limitations based on the MCLs of these constituents.

To date the District has not performed this annual analysis, so there is no data currently available to indicate whether or not the District will be in compliance with the Basin Plan. This information will be critical to evaluating the potential impact of recycled water in the Sweetwater Basin and if any amendments to the Basin Plan are necessary to allow recycled water use in the North District area.

Department of Health Services: Preparation of an Engineering Report for the Production, Distribution and Use of Recycled Water

The current State of California Water Recycling Criteria (adopted in December 2000) require the submission of an engineering report to the RWQCB and the California Department of Public Health (DPH) before recycled water projects are implemented. These reports must also be amended prior to any modification to existing projects. The purpose of an engineering report is to describe the manner by which a project will comply with the Water Recycling Criteria.

Section 60323 of the Water Recycling Criteria specifies that the engineering report be prepared by a properly qualified engineer, registered in California and experienced in the field of wastewater treatment. Recycled water projects vary in complexity. Therefore, reports will vary in content, and the detail presented will depend on the scope of the proposed project and the number and nature of the agencies involved in the production, distribution, and use of the recycled water. The report should contain sufficient information to assure the regulatory agencies that the degree and reliability of treatment is commensurate with the requirements for the proposed use, and that the distribution and use of the recycled water will not create a health hazard or nuisance.

It is anticipated that an amendment to the 2007 Otay Water District Ralph W Chapman Water Reclamation Facility Engineering Report on the Production, Distribution and Use of Recycled

Water Engineering Report would have to be prepared for the NDRWSDP to include additional information on the Middle Sweetwater Basin as a recycled water use area.

Construction NPDES General Permit

The project may require coverage under the Construction General Permit if installation of facilities and pipelines would result in disturbance of one or more acres of land surface. The SWRCB permits all regulated construction activities under NPDES General Permit for Storm Water Discharges Associated with Construction Activity (Order No. 98-08-DWQ (1999) or subsequently issue amended permit). This Order requires that, prior to beginning any construction activities, the permit applicant must obtain coverage under the General Construction Permit by preparing and submitting a Notice of Intent (NOI) and appropriate fee to the SWRCB. Additionally, coverage would not occur until an adequate Stormwater Pollution Prevention Plan (SWPPP) has been prepared. A separate NOI shall be submitted to the SWRCB for each construction site. This permit is due for re-issuance by the SWRCB.

Construction activities subject to the NPDES Construction General Permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation, that result in soil disturbances of at least one acre of total land area.

The SWPPP has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of stormwater discharges, and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in stormwater as well as non-stormwater discharges. The SWPPP must include BMPs that address source control, and, if necessary, must also include BMPs that address specific pollutant control. The SWPPP includes a description of (1) the site, (2) erosion and sediment controls, (3) means of waste disposal, (4) implementation of approved local plans, (5) control of post-construction sediment and erosion control measures and maintenance responsibilities, and (6) non-stormwater management controls. Dischargers are also required to inspect their construction sites before and after storms to identify stormwater discharge associated with construction activity and to identify and implement controls where necessary.

Construction Dewatering

This may apply if construction of pipeline and facilities crosses the Sweetwater River valley area. There is a WDR Waiver Policy in the Basin Plan for short-term construction dewatering operations where there is no discharge to surface waters. The San Diego RWQCB has in place a General WDR Order No. R9-2008-0002 (NPDES Order No. CAG919002) that requires any groundwater dewatering project discharging to surface waters, bays, lagoons or beaches to obtain coverage and comply with the provisions listed in the Permit and in the approval issued by the RWQCB.

CDFG 1600 Streambed Alteration Agreement

Because there is a possibility for distribution pipes to cross the Sweetwater River and maybe other tributaries, the project sponsors would have to notify the California Department of Fish and Game (CDFG) and obtain a Lake or Streambed Alteration Agreement (LSAA) if required. The CDFG must be notified before beginning an activity that will modify a defined watercourse or

drainage feature. The CDFG determines whether a LSAA is needed for the activity and will draft and process the LSAA for approval.

ACOE CWA Section 404 Permit

The U.S. Army Corps of Engineers (ACOE) should be consulted to determine if any work within the Sweetwater River (or any of its tributaries) would result in the discharge of dredged or fill material into "Waters of the U.S." (including jurisdictional wetland). Section 404 of the CWA requires a permit for such activities, unless the project is exempt from Section 404 regulation (e.g., certain farming and forestry activities).

CWA Section 401 Water Quality Certification (WQC)

A WQC must be obtained from the RWQCB if the project would potentially impact surface or groundwater quality, including Basin Plan beneficial uses. The State's WQC Program was formally initiated in 1990 in response to the requirements of CWA Section 401. In addition to requiring a WQC for discharges that necessitate ACOE permits, Section 401 of the CWA has evolved into the State's de facto wetland protection and hydromodification regulation program.

San Diego County Code

The County of San Diego enforces the following recycled water policies and ordinances.

Water Recycling Ordinance (Chapter 5)

Section 67.520 Prohibitions. No person or public agency shall use water from any source of quality suitable for potable domestic use for non-potable uses, including the irrigation of greenbelt areas, highway landscaped areas, flushing of toilets and urinals in non-residential structures and industrial uses if suitable recycled water is available as provided in Water Code Section 13550 through 13554. This prohibition shall only apply to discretionary land use permits as defined in Section 67.502(c) approved by the County after the effective date of this ordinance.

Section 67.521. Discretionary Land Use Permits, c) Conditions of Use. The design and operational requirements for the project's recycled water distribution system and schedule for compliance shall be based on the rules and regulations adopted pursuant to Section 67.512, and shall require compliance with both the California State Department of Health Service Wastewater Reclamation Criteria and requirements of the California RWQCB.

Section 67.524 Cross Connection Control. There shall be no physical connection between the potable water supply and the recycled water supply, whereby the potable supply could become contaminated. Each special purpose district may appoint a water supervisor, knowledgeable about plumbing and cross connection control, to monitor construction and operation of the on-site and off-site facility distribution system(s). If the special purpose district serving a facility has no water supervisor, the owner or operator of the facility shall appoint a water supervisor to monitor construction and operation of the on-site facility distribution system(s). The Administrator shall review recycled water distribution system plans and recycled water irrigation system plans for cross-connections. This includes an initial cross-connection

control site inspection and an annual cross-connection control inspection of sites having both recycled and potable water systems.

San Diego County Groundwater Ordinance (Chapter 7)

The purpose of this chapter is to establish regulations for the protection, preservation, and maintenance of this resource. It is not the purpose of this ordinance to limit or restrict agricultural activities, but to ensure that development will not occur in groundwater-dependent areas of the County unless adequate groundwater supplies are available to serve both the existing uses within the affected groundwater basin and the proposed uses. The economic, social, and environmental benefits of maintaining viable agriculture in San Diego County are expressly recognized in the adoption of this ordinance.

- Section 68.312. Plumbing and Drainage System to be Connected to Public Sewer if Available.
- Section 68.312.1 Failed Systems to be Replaced by Connection to Public Sewer Where Repairs are Infeasible.

Resource Protection Ordinance (Chapter 6)

This chapter will protect sensitive lands and prevent their degradation and loss by requiring the Resource Protection Study for certain discretionary projects. Where any portion of a parcel contains environmentally sensitive lands, this chapter shall be applicable to the portions of the parcel containing the sensitive lands, and to the remainder of the parcel only to the extent necessary to achieve the purpose and intent of this chapter.

Section 86.603. Resource Protection Study and Findings (a) Application of Regulations. Prior to approval of any of the following types of discretionary applications, a Resource Protection Study must be completed and the approving authority shall make a finding that the use or development permitted by the application is consistent with the provisions of this Chapter:

- Major Use Permits
- Major Use Permit Modifications
- Certificates of Compliance filed pursuant to Sections 81.616.1 or 81.616.2 of this Code (Excluding condominium conversions)
- Site Plans (excluding those statutorily or categorically exempt from review under the CEQA and those required by a Sensitive Resource Area Designator)
- Administrative Permits (excluding those statutorily or categorically exempt from review under the CEQA and those for clearing)

Section 86.603. Resource Protection Study and Findings (b) Resource Protection Study Requirements. A Resource Protection Study submitted shall be accompanied by a plot plan and any such information, maps, plans, documentation, data and analyses as may be required by the Director of Planning and Land Use.

Section 86.604. Permitted Uses and Development Criteria. Permitted uses and development criteria are listed for wetlands, wetland buffer areas, floodways, floodplain fringe,

steep slope lands, waiver of open space easement, sensitive habitat lands, and significant prehistoric or historic sites.

Section 86.605. Exemptions. (2) If there are located wetlands or floodplains or riparian habitat on the portion sought to be exempted, that (aa) none of said lands is affected directly or substantially by the project, or (bb) that measures have been taken which avoid development on said lands.

(c) Any essential public facility or project, or recreational facility which includes public use when the authority considering an application listed at Section 86.603(a) above makes the following findings:

(1) The facility or project is consistent with adopted community or subregional plans;
(2) All possible mitigation measures have been incorporated into the facility or project, and there is no feasible less environmentally damaging location, alignment, or non-structural alternatives that would meet project objectives;
(3) Where the facility or project encroaches into a wetland or floodplain, mitigation measures are required that result in any net gain in the wetland and/or riparian habitat;
(4) Where the facility or project encroaches into steep slopes, native vegetation will be used to revegetate and landscape cut and fill areas; and
(5) No mature riparian woodland is destroyed or reduced in size due to otherwise allowed encroachments.

(g) Any project for which the Director of the Department of Planning and Land Use has determined in writing that it can be seen with certainty that either no environmentally sensitive lands exist on the property, or that all environmentally sensitive lands on the property are assured of being protected by a prior permit to the same standards as those contained in this Chapter.

(h) Any project located within a Specific Plan, within the Urban Limit Line and within an approved Revitalization Action Plan established prior to August 10, 1988, where the Board of Supervisors finds that an amendment to that Specific Plan makes the project more clearly conform to this Chapter and where there is a public benefit beyond the boundaries of the project and it is found that the project will revitalize and/or stimulate revitalization of the community.

County of San Diego

DEPARTMENT OF ENVIRONMENTAL HEALTH

GARY W. ERBECK
DIRECTOR

Land and Water Quality Division
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RICHARD HAAS
ASSISTANT DIRECTOR

August 26, 2005

Larry Olds
Otay Water District
2554 Sweetwater Springs Blvd
Spring Valley, CA 91977-7299

Dear Mr. Olds:

Use of recycled water outside of standard 09:00pm to 06:00am hours.

Thank you for submitting the package on August 26, 2005 with the proposed sites and irrigation stations requesting to use of recycled water outside of normal operating hour (9pm-6am). DEH has no objections to using recycled water outside of normal operating hours provided the areas will not have any contact with the public and is in conformance with Title 22. Areas of discussion included mid-slopes, medians, etc. DEH will retain the package for our records in the event there are complaints or other issues. It is understood that staff from the Otay Water District will initially visit each of the proposed sites to verify the proposed stations using recycled water will not impact the public with recycled water spray, mist, or runoff. The Otay Water District may deny the use of recycled water anytime deemed necessary.

Sincerely,

GLENN LEEKS, REHS
Recycled Water/Cross Connection Control

Cc: Gary Stalker, Reclamation Specialist Otay Water District

STANDARD SPECIFICATIONS

SECTION 03000 RULES AND REGULATIONS FOR RECLAIMED WATER USE

PART 1 - GENERAL REQUIREMENTS AND CONDITIONS

A. Introduction

The Otay Water District (DISTRICT) is exclusively dependent on imported water for domestic, agricultural and industrial uses. This imported supply is considered limited and its future reliability uncertain. In addition, transport of this water requires energy that contributes to the total cost to the end user. It is in the best interests of the DISTRICT to promote and implement innovative water management strategies to conserve water resources while still satisfying water needs of DISTRICT customers.

The DISTRICT operates and maintains a reclaimed water distribution network within its service area enabling it to provide disinfected tertiary treated reclaimed water for a variety of beneficial uses. Reclaimed Water usage as an alternate will conserve an equal amount of potable water for domestic use.

The beneficial use of reclaimed water is regulated by the California State Water Resources Control Board (CWRCB). California Water Code Section 13551 establishes a State policy to encourage the use of reclaimed water. Permission to use reclaimed water is based on the ability to adequately treat wastewater to the point that the reclaimed water (effluent) meets or exceeds the requirements of existing Title 22, Chapter 3, regulations of the California Code of Regulations. Title 22 was promulgated by the State of California Department of Health Services (DOHS) to ensure proper health protection and specify the treatment degree to match the intended applications.

In accordance with waste discharge requirements for water reclamation projects, the Regional Water Quality Control Board (RWQCB) requires that Rules and Regulations for facilities using reclaimed water be established.

B. Purpose

The purpose of these Rules and Regulations is to establish procedures and specifications for the development and operation of reclaimed water systems in the DISTRICT service area and shall be used in conjunction with Section 26 of the Otay Water District's Code of Ordinances.

C. Goals

1. Achieve conservation of potable water supplies by using reclaimed water for current and future demands. Reclaimed water uses shall be for the maximum public benefit and may include:
   - agricultural irrigation
   - commercial uses (including flushing toilets and urinals)
   - construction use
   - groundwater recharge - industrial processes
   - landscape irrigation
   - landscape and/or recreational impoundments
   - wildlife habitat

2. Maintain reclaimed water quality through a stringent pretreatment program for commercial and industrial wastes and by restricting brine discharges from water softeners, evaporative coolers, and other sources. See Code of Ordinances Section 52.04.

3. Prevent direct human consumption of reclaimed water through:

   a. Adherence to all applicable rules and regulations
   b. Posting of warning signs by the user
   c. A cross-connection/backflow prevention program
   d. Education of the public

4. Control runoff of reclaimed water through monitoring of the installation and operation of all reclaimed water systems and use areas.

5. Monitor and control reclaimed water quality.

D. Severability

If any section, subsection, subdivision, paragraph, sentence, clause or phrase of these Rules and Regulations, or any part thereof, is for any reason held to be invalid, such decision shall not affect the validity of the remaining portions of these Rules and Regulations or any part thereof. The DISTRICT Board of Directors declares that it would have approved these Rules and Regulations by section, subsection, subdivision, paragraph, sentence, clause, phrase, or any part thereof, irrespective of the fact that any one or more of the sections, subsections,

subdivisions, paragraphs, sentences, clauses or phrases, or any part thereof, be declared invalid.

E. Service Area

These Rules and Regulations pertain to reclaimed water service to lands and/or improvements lying within the legal boundaries of the DISTRICT unless otherwise stated. It is the intent of the DISTRICT to provide reclaimed water service in accordance with these Rules and Regulations to all areas identified in the Otay Water District Water Reclamation Master Plan, including all subsequent revisions for the use of reclaimed water. Reclaimed water service shall be provided to the service area when related transmission distribution facilities are completed and service becomes available.

F. Determination of Reclaimed Water Use Area

1. General

a. The DISTRICT will prepare a Water Reclamation Master Plan (Master Plan) designating current and potential areas for reclaimed water use. The Master Plan shall be in accordance with all regulatory agency requirements and encourage reclaimed water use. The Master Plan may be reviewed and updated as needed.

b. The DISTRICT may review and modify its Master Plan and recommend additional water service areas where reclaimed water may be used in lieu of potable water. Where it is determined reclaimed water is, or will be available within three years, the DISTRICT may request modifications to existing on-site water facilities and require construction of reclaimed water systems in new developments.

c. The DISTRICT may enter into agreements with cities and/or other water agencies to determine reclaimed water use areas within the service area/jurisdiction of those entities.

2. Existing Potable Water Service

a. Upon adoption of these Rules and Regulations, and each update of the Master Plan, the DISTRICT may make determinations of areas where existing water use should be served with reclaimed water.

b. A notice of the determination to use reclaimed water shall

be sent to the current owner, explaining the DISTRICT's reasons for use and resultant procedures needed to facilitate reclaimed water use.

3. New Reclaimed Water Service

Upon submittal by applicant of a tentative map, land use permit, or request for reclaimed water service, the DISTRICT shall review the Master Plan and make preliminary determinations as to whether reclaimed water service should be provided to the proposed area in question.

a. Applicant meets with the DISTRICT to establish potential service locations and service pressures for proposed irrigation or construction facilities. Areas that may receive reclaimed water and areas that must receive potable water will be established.

b. Applicant completes and submits to the DISTRICT an application form and service exhibit showing proposed area(s) to receive reclaimed water, proposed service locations, meter sizes, size and location of DISTRICT-owned facilities that would provide service, and any other specific call-outs regarding reclaimed water use.

G. Authorized Uses

In accordance with the goals of the DISTRICT, as stated in these Rules and Regulations, the uses of reclaimed water include only those uses approved by the DOHS and for which Title 22 of the California Code of Regulations provides treatment requirements. Each such use will be considered for approval on a case-by-case basis. Prior to approval and at its discretion, the DISTRICT may set forth specific requirements as conditions for providing service and/or require specific prior approval from the appropriate regulatory agencies.

H. Conditions of Service

Reclaimed water service shall be provided by the DISTRICT only if a permit for such service is obtained in the manner provided in these Rules and Regulations. Reclaimed water service shall be available, provided, and used in accordance with other codes, rules, and regulations listed in Section I below.

If any of the following conditions of service are not satisfied at all times, a Permit For Reclaimed Water Service may be revoked by the DISTRICT after which the permitted reclaimed water service shall cease in

the manner described in Section 27 of the Code of Ordinances. Connection to a potable water system is prohibited.

1. Financial

   Conditions relating to service rates, fees and billing shall be established by the Board of Directors and in accordance with the Code of Ordinances.

2. Operational

   a. Liability:

      The DISTRICT shall not be liable for any water related damage resulting from (but not limited to):

      - defective plumbing
      - broken or faulty services
      - onsite facilities failures
      - high or low pressure conditions
      - interruptions of service

   b. Service

      All reclaimed water will be provided to the user as specified in the Application/Permit For Reclaimed Water Service. Reclaimed water use will be subject to the same restrictions as stated in the Code of Ordinances.

3. Regulatory

   Reclaimed water service may be suspended whenever the quality of the reclaimed water does not comply with the requirements of the regulatory agencies or at any time these Rules and Regulations For Reclaimed Water Service are violated.

I. <u>Other Applicable Codes, Rules and Regulations</u>

1. The following applicable codes are hereby referenced and made a part of these Rules and Regulations. If there are any discrepancies amongst the Codes the most stringent shall take precedence.

   - Title 22
   - Title 17
   - The Otay Water District Code of Ordinances

PART 2 - ADMINISTRATIVE REQUIREMENTS

A. Procedures for Receiving Reclaimed Water Service

The following sections define the steps a potential reclaimed water user must complete in order to receive service. Exceptions to these procedures must be approved by the Board of Directors. Approval for service shall be indicated by the DISTRICT issuing a Permit For Reclaimed Water Service. This permit shall be in addition to permits and conditions required by all other regulatory agencies. Normally, the agencies involved in this process include the reclaimed water purveyor and the San Diego County Department of Health Services (SDCHS). In addition, the local municipality planning department, and RWQCB may be involved in the review process.

1. Preliminary Determination

   a. All potential uses of reclaimed water shall be reviewed by the DISTRICT. The DISTRICT shall determine whether a given service will be furnished with reclaimed water. The decision shall be in accordance with the following:

      - Code of Ordinances and Policies of the DISTRICT
      - Current standards set forth in Title 22, California Code of Regulations
      - Current discharge requirements issued by the RWQCB
      - Protection of public health
      - Current or future availability of providing reclaimed water service

   b. The DISTRICT and the applicant shall have a meeting to discuss the potential use of reclaimed water. If it is decided that reclaimed water will be served, then the DISTRICT will provide the customer with the following:

      - Location of existing main lines and/or required new mains to be installed
      - Static pressure
      - Procedures and processing form
      - Application form

2. Application Procedures

a. A completed application package for reclaimed water service must be submitted to the DISTRICT by the owner, or authorized representative of the property which is intended to be served with reclaimed water. The following items shall be included in the application package:

- Completed application form
- Two sets of blueline prints showing irrigation system
- Required deposits
- Copy of "Procedures and Processing Form"
- A drawing of the property on one, 8 1/2 x 11 paper sheet

Include/show:

- Proposed location of service connection, reclaimed and potable water main lines
- Size of desired service connection
- Use area location
- Areas to be served with reclaimed water and areas excluded from reclaimed water service
- A brief description of all special construction requirements

b. The applicant agrees by signature on the application to comply with these Rules and Regulations.

c. After DISTRICT's review, the application package shall be submitted to the DOHS for their approval.

d. Upon approval of the required application package by the DISTRICT and the SDCHS, the applicant will be required to submit the original corrected construction drawings. All required deposits, including District and SDCHS, will be collected at this time.

e. After the original corrected construction plans are signed by the DISTRICT Engineer, they will be returned to the Applicant. The Applicant will return four (4) blueline copies of the approved drawings to the DISTRICT. At this time the local municipality may or may not be involved in the review process. Additional processing with other agencies/municipalities may be required prior to commencing construction.

B. Permits

The permit shall be the binding agreement between the DISTRICT and the User. These are the steps in obtaining permits for Reclaimed Water Use:

a. A Temporary Permit For Reclaimed Water Service maybe obtained by the User to receive reclaimed water.

b. Temporary service is valid for a maximum of 120 days. If permanent service status is not achieved within this 120 days, service will be discontinued.

c. Upon satisfactory completion of construction, inspection, testing, and payment of appropriate fees, temporary service may be converted to permanent reclaimed water status.

1. Permits issued under these Rules and Regulations shall be subject to the following conditions:

a. The applicant shall adhere to requirements prescribed by these Rules and Regulations.

b. A copy of the current permit must be on file at the user's office.

c. The permit will remain in effect subject to annual inspection by the DISTRICT and other regulatory agencies, and shall be modified to reflect changes in ownership and uses.

PART 3 - TECHNICAL REQUIREMENTS
DESIGN CRITERIA: RECLAIMED WATER FACILITIES

A. General

Reclaimed water facilities shall be constructed in accordance with procedures and requirements of the DISTRICT for proposed use of reclaimed water.

B. Use of Reclaimed Water

As set forth in PART 2 of this document, the DISTRICT shall determine whether a given service will be furnished with reclaimed or potable water. The determination shall be in accordance with the standards of

treatment and water quality requirements set forth in Title 22, Chapter 3 of the California Code of Regulations, and Policy 17 of the DISTRICT Board of Directors.

C. Design Criteria

The design criteria for reclaimed water facilities is separated into two categories. The "off-site" (pre-meter) reclaimed water facilities consist of those facilities which provide water including the water meter. These facilities become DISTRICT property and will be operated and maintained by the DISTRICT. "On-site" (post-meter) reclaimed water facilities are on the downstream side of the water meter. These facilities are owned, operated and maintained by the customer.

D. Off-site Reclaimed Water Facilities

1. A licensed Civil Engineer registered in the State of California shall be responsible for the design of off-site reclaimed water facilities, including the preparation of plans and specifications.

2. The specifications can be found in the current edition Otay Water DISTRICT Standard Specifications for Water and Sewer and Reclaimed Facilities.

3. The minimum size distribution main shall be 6-inches. The DISTRICT shall be the final authority concerning the size and pressure rating of the distribution main. Distribution mains shall be designed as looped systems wherever possible.

4. Off-site reclaimed water mains shall typically be located on the opposite side of the street (or easement) from potable water mains. In no case shall parallel potable water and reclaimed water mains be designed with less than a 10-foot horizontal separation.

5. Off-site reclaimed water mains parallel to potable water mains shall be designed with a top of pipe depth of 54-inches from finished grade.

6. Off-site reclaimed water mains shall be designed to cross under potable water mains. A minimum vertical separation of 12-inches shall be maintained between potable water and reclaimed water facilities. If less than 12", a steel casing shall extend 10-feet each side from the centerline of the potable water main.

7. Off-site reclaimed water mains shall be designed with service laterals perpendicular to the main. A service lateral, of the appropriate size, shall be designed for each lot or area to be served with reclaimed water. A service lateral shall not be designed to service opposite sides of a street or easement.

8. Off-site reclaimed water systems shall not be designed with fire hydrants, wharf heads, or any other appurtenance which would allow reclaimed water to be used for other than permitted purposes.

9. Off-site reclaimed water mains shall not be designed with temporary connections unless expressly approved by the DISTRICT. When permitted, temporary connections shall be located, sized, and designed according to the requirements of the DISTRICT.

10. Inter-connections between off-site reclaimed water and potable water mains shall be permitted only when the off-site reclaimed water main is to tempporarily convey potable water. This inter-connection shall be through an approved master reduced pressure backflow device located and designed per the requirements of the DISTRICT. Other than the situation stated in this subsection, no cross connection of any kind shall be permitted between the potable water and reclaimed water mains.

E. <u>On-site Reclaimed Water Facilities</u>

1. The design of on-site reclaimed water facilities, including the preparation of plans and specifications, shall be under the responsibility of a licensed Landscape Architect or Civil Engineer registered with the State of California.
2. The design of on-site reclaimed facilities shall conform to the most current provisions set forth herein and to any other conditions, standards, and requirements set forth by the DISTRICT.

3. In those areas where reclaimed water is not immediately available, and the DISTRICT has determined that reclaimed water will be supplied in the future, the on-site facilities shall be designed to use reclaimed water. Provisions shall be made, as directed by the DISTRICT, to allow for connection to the reclaimed distribution main when it becomes available. In the interim, potable water shall be

supplied through a temporary potable water connection installed per the Otay Water District Standard Specifications. When reclaimed water becomes available, the Owner shall remove the backflow prevention device in the presence of, and as directed by, the DISTRICT Engineer. The on-site system will be connected to the reclaimed water distribution main per the current DISTRICT Standard Specifications.

4. On-site reclaimed water systems shall be designed to include backflow prevention per the requirements of the DISTRICT's Standard Specifications. In some cases, more stringent backflow protection may berequired.

5. The reclaimed water system shall be separate and independent of any potable water system. Cross connections between potable water facilities and reclaimed water facilities are prohibited.

6. An annual cross-connection inspection will be done by either the DISTRICT or San Diego County Department of Health Services. Copies of inspection reports will be forwarded to the non-inspecting party.

7. Hose bibs and fire hydrants on reclaimed water facilities are prohibited.

8. Drinking fountains shall be protected from the spray of reclaimed water in a manner approved by the DISTRICT Engineer, prior to installation. See Part 3- Section E.20 below.

9. Conditions causing overspray and runoff shall be limited or prevented.

10. Potable and reclaimed lines shall not to be installed in the same trench.

11. Reclaimed lines shall be installed below the potable lines where running parallel to each other. Where this is not possible, the reclaimed line shall be sleeved. Details of this installation shall be clearly drawn on the plans. See Part 3, Section D.6, for perpendicular crossings.

12. On-site reclaimed water irrigation systems shall be designed to meet the peak moisture demand of the plant material to be irrigated. The use of moisture sensors is encouraged, but not mandatory.

13. On-site reclaimed water irrigation systems shall be designed to apply irrigation water in a manner compatible with the infiltration rates of the soil types within the approved use area. Evidence that infiltration rates have been assessed shall be included with the design. Where varying soil types are present, the system design shall be compatible with the lowest infiltration rate present.

14. On-site reclaimed water systems shall be designed to prevent discharge onto areas not under control of the Owner. Appropriate sprinklers, bubblers, emitters, rotors, etc., shall be employed in the design to confine the discharge to the approved use area. The design shall avoid spray patterns which discharge onto obstructions that tend to concentrate water which results in ponding and/or runoff.

15. On-site reclaimed water systems shall be designed to operate during periods of minimal public use of the area. The total time required to irrigate the design area shall not exceed nine (9) hours in any 24-hour period. The system shall be designed to operate between the hours of 9 PM and 6 AM.

16. On-site reclaimed water system designs shall include automatic system control devices which can be easily adjusted to minimize ponding and runoff.

17. On-site reclaimed water system design plans shall contain the following information for each meter desired:

    a. Meter location and size
    b. Gross and net irrigation area served by each meter (sq ft or acres)
    c. Peak flow through the meter (gpm)
    d. Estimate of the yearly demand (acre-feet)
    e. Design operating pressure at the meter (psi)

18. On-site reclaimed water system design plans shall contain a legend showing the pertinent data for the materials to be used in the system construction. Included shall be a pipe schedule (listing pipe sizes and materials of construction), valve types (including quick-coupling type valves), and the following information for each type of sprinkler device:

    a. Manufacturer and model number
    b. Sprinkler radius (feet)

c. Operating pressure (psi)
d. Flow (gpm)
e. Sprinkler pattern

19. On-site reclaimed water design plans shall contain the following detailed information:

    a. Points of connection
    b. Routing of all pipes
    c. Gate valves
    d. Control valves
    e. Quick-coupling valves
    f. Routing of control wires
    g. Control stations
    h. The area controlled by each control station

20. On-site reclaimed water design plans shall clearly detail backflow prevention devices, all potable water lines, buildings, walls, exterior drinking, and decorative fountains, swimming pools, playgrounds, or any other permanent facilities in the design area. If none of these items are present in the design area, it shall be specifically stated on the plans that none exist. Drinking fountains shall be protected from the spray of reclaimed water either by maintaining a horizontal separation of at least 30 feet between the drinking fountain and the nearest spray type emitter or by the use of a covered fountain approved by the DISTRICT for this purpose.

21. On-site reclaimed water design plans shall clearly indicate the following minimum top of pipe depth requirements:

    a. Intermittent pressure lines 2-inches in diameter and smaller: 12-inches deep.

    b. Constant pressure lines less than 6 inches in diameter: 18-inches deep

    c. Constant pressure lines 6-inches in diameter and larger: 30-inches

22. On-site reclaimed water notes are to be shown on all on-site reclaimed water system design plans. These notes, as appended, may be expanded or otherwise modified as directed by the DISTRICT.

PART 4 - MONITORING FACILITIES INSPECTION AND MAINTENANCE

A. Off-site Facilities

Operation, maintenance and surveillance of all DISTRICT reclaimed water systems including, but not limited to reclaimed water pipelines, valves, connections, storage facilities, and other related equipment and property up to and including the meter, shall be under the management and control of the DISTRICT. Only DISTRICT personnel shall operate, adjust, change, alter, move or relocate any portion of the off-site reclaimed water system.

The DISTRICT Operations Supervisor is familiar with these Rules and Regulations. The Supervisor is the contact person between the User and the DISTRICT. The Supervisor shall regularly inspect on-site reclaimed water systems and their operation for conformance with these Rules and Regulations.

B. On-site Facilities

1. General

   a. The operation, surveillance, maintenance, and repair of all on-site reclaimed water facilities are the responsibility of the User. The User's designated "On-Site Reclaimed Water Supervisor" shall bear the responsibility for the distribution of reclaimed water in accordance with the Otay Water DISTRICT Code of Ordinances and these Rules and Regulations. The DISTRICT shall receive the following information regarding the individual designated as "On-Site Supervisor": their name, address and telephone number of their location during normal working hours, and a telephone number at which they can be reached during off hours.

   b. The DISTRICT must be notified in writing of any change in the information in "1.a." above within ten (10) working days.

2. The User shall have the following responsibilities pertaining to operation of on-site facilities:

   a. To ensure that all operations and maintenance personnel are trained and familiarized with the use of reclaimed water.

   b. To ensure precautionary measures be taken to minimize direct contact with reclaimed water. For work involving more than a casual contact with reclaimed water, employees must be pro-

vided with proper protective equipment. Adequate first aid supplies should be available on the premises. All cuts and abrasions should be promptly treated to prevent infection.

c. To furnish their operations and maintenance personnel with maintenance instructions, irrigation schedules, controller charts, and as-built drawings to ensure proper operation in accordance with these Rules and Regulations.

d. To ensure all reclaimed water facilities are operated and maintained in accordance with these Rules and Regulations and other documents governing reclaimed water systems within the DISTRICT.

e. The User shall be responsible for any and all subsequent uses of the reclaimed water. Operation, maintenance and control measures to be utilized in this regard shall include where appropriate, but are not limited to:

(1) Operation of onsite reclaimed water facilities shall be operated to prevent or minimize discharge onto areas not under control of the User so as to minimize public contact.

(2) Operation of the on-site reclaimed water facilities shall be during periods of minimal human use of the service area. Consideration shall be given to allow a maximum dry-out time before the irrigated area will be used by the public.

(3) Utilization of automatic controller systems to minimize ponding and runoff of reclaimed water. Total sprinkler run times shall not be greater than the time needed to supply the landscape's water requirement. If runoff occurs before the landscape's water requirements are met, the automatic controllers shall be reprogrammed with a greater number of water cycles of shorter duration to meet the requirements. This method of operation is intended to minimize ponding and runoff.

(4) The User reporting to the DISTRICT any and all failures in the reclaimed water system that cause an unauthorized discharge of reclaimed water.

(5) Protection of all drinking fountains located within the approved use area from contact with windblown reclaimed water spray, direct application through irrigation or

other approved uses by location and/or a cloistering structure. Protection shall be by design, construction practice and system operation.

(6) Protection of facilities that may be used by the public. They include but are not limited to, eating surfaces and playground equipment located within the approved use areas. These shall be protected by siting and/or shelter from contact with reclaimed water to the maximum extent possible. Windblown spray,direct contact through wash down or by irrigation application, or other approved uses are considered sources of reclaimed water. Protection shall be by design, construction practice and system operation.

(7) Notification of the DISTRICT of all updates and proposed changes. Approval by the DISTRICT shall be obtained prior to construction in accordance with DISTRICT procedures. All updates and proposed changes shall comply with these Rules and Regulations and governing documents of all other regulatory agencies.

3. The User shall enforce the following prohibitions:

a. Cross-connections: Cross-connections, as definedby the California Code of Regulations, Title 17,resulting from the use of reclaimed water or from the physical presence of a reclaimed water service, whether by design, construction practice or system operation, are strictly prohibited.

b. Hose Bibs: Use or installation of permanent hose bibs on any customer water system that presently operates or is designed to operate with reclaimed water, regardless of the hose bib construction or identification is prohibited. An in-line valve down stream of an approved quick coupler device is allowed as long as it is in conjunction with a flexible hose permanently clamped to the down stream end of the assembly.

c. Runoff: Conditions that directly or indirectly cause runoff of reclaimed water either within or outside of the approved use area, whether by design, construction practice or system operation, are prohibited.

d. Ponding: Conditions that directly or indirectly cause reclaimed water to pond either within or outside of the approved use area, whether by design, construction practice, or system

operation, are prohibited.

e. Windblown Spray: Conditions that directly or indirectly permit windblown spray to pass outside of the approved use area, whether by design, construction practice, or system operation, are prohibited.

f. Disposal in Unapproved Areas: Disposal of reclaimed water for any purposes, including approved uses, in areas other than those specifically approved by the DISTRICT and without the prior knowledge and approval of the governing regulatory agencies, is prohibited.

g. Unapproved Uses: Use of reclaimed water for any purposes other than those specifically approved by the DISTRICT, is prohibited.

C. Monitoring and Inspection

The DISTRICT shall monitor and inspect the entire reclaimed distribution facility, including both off-site and on-site facilities. The DISTRICT shall conduct monitoring programs, maintain records as deemed necessary, inspect on-site facilities for compliance with these Rules and Regulations, and provide reports as requested by other regulating agencies. For these purposes, the DISTRICT shall have the right to enter upon the customer's premises during reasonable hours to inspect on-site reclaimed water facilities and approved use areas. Reasonable hours shall include hours when irrigation is occurring. The DISTRICT, RWQCB and SDCHS shall have the right to enter upon the customer's premises during reasonable hours, from time to time, to verify that the customer's irrigation practices conform with these Rules and Regulations. Where necessary, keys and/or lock combinations shall be issued upon request to the DISTRICT to provide such access.

D. Maintenance Responsibility

1. Reclaimed Water System

The User is responsible for maintaining all on-site facilities that are under the ownership of parties other than the DISTRICT.

2. Obstruction in Meter Boxes

No person shall place, dispose, deposit or permit the placement, disposal, deposit of oil, toxic, hazardous or contaminated liquid or waste, trash, soil, building materials or other

substances, objects, or obstructions, in, on, or around meter boxes or other DISTRICT facilities. No person shall allow or permit meter boxes or other DISTRICT facilities from becoming obstructed or obscured by trees, shrubs, plants or in any other manner so as to impede their use or access to such facilities. The DISTRICT may accomplish the cleaning and removal at the User's expense. The DISTRICT must provide reasonable notice to the User before assessing the charge.

E. Violation

1. Determination

The DISTRICT reserves the right to determine whether a violation of the Rules and Regulations has resulted from any action or occurrence that is the responsibility of a User. Insofar as the violation of these Rules and Regulations constitutes a violation of any regulatory agency requirement, the DISTRICT shall make its determination with consultation on behalf of the concerned agency.

2. Specific Violations

Specific violations shall include those that directly cause noncompliance with any one of the specific prohibitions as listed in these Rules and Regulations. However, by definition, noncompliance with any condition or conditions of these Rules and Regulations, whether willfully or by accident, shall constitute a violation.

3. Notification

It is the responsibility of the user to notify the DISTRICT of any and all failures in the on-site reclaimed water system whether or not in the user's opinion the failures resulted in violations. Failures may occur as a result of the User's action, an action by unauthorized personnel or any non-designated use of the reclaimed water service. If there are any doubts regarding whether a violation has occurred, the User should notify the DISTRICT so that a determination can be made.

Notification of failures and violations should be made by telephone, as soon as possible, to the DISTRICT's Off-site Supervisor. If the failure occurs after normal business hours, notification should be made no later than 9:00 a.m. on the next regular business day following the occurrence.

4. Corrective Action

a. If the Off-Site Supervisor's investigation results in the determination that a violation has occurred, then it shall be the responsibility of the User to initiate corrective action. DISTRICT staff will record all occurrences and violations on the reclaimed water service Notice of Inspection and Violations. Pertinent violations will be documented and a copy of this notice will be hand delivered or mailed to the User.

b. A timetable for completing the corrective action should be negotiated with the DISTRICT Off-Site Supervisor by the User, with the final approval of the DISTRICT. Such corrections can involve human factors, such as additional training or procedures modifications, as well as physical alterations to the system. Corrections not made in accordance with the timetable shall result in the termination of service by shutting off and locking the meter.

If, in the opinion of the Off-Site Supervisor, the violation constitutes an immediate danger to the public health, then service shall be terminated immediately by shutting off the meter or service and locking it. Service shall be resumed only after the violation has been corrected to the satisfaction of the Off-Site Supervisor.

The User is to maintain a written log of all system failures and violations, including corrective action taken. The log will be reviewed by the DISTRICT regularly.

5. Administrative Review

A mandatory administrative review will be conducted to examine User's irrigation practice if three written violations are issued within a 30-day period. The On-Site Supervisor and Owner/User or agent is required to present reasons for non-compliance with these Rules and Regulations. The Owner shall present a plan for corrective action acceptable to regulatory agencies. The accepted plan and implementation schedule shall be adhered to or service may be suspended.

PART 5 - DEFINITIONS

AF/YR: Acre-Feet per Year.

Agricultural use: Water used for the production of crops and/or livestock and the preparation of these products for market.

Air-Gap Separation: A physical break between a supply pipe and a receiving vessel. The air gap shall be at least double the diameter of the supply pipe, measured vertically above the top rim of the vessel, and in no case less than one inch.

Applicant: Any person, firm, corporation, association, or agency who applies for reclaimed water service.

Application rate: The rate at which irrigation water is applied to a design or use area, expressed in inches per hour.

Approved check valve: A check valve that seats readily and completely. It must be carefully machined to have free moving parts and assure water tightness. The face of the closure element and valve seat must be bronze or other non-corrodible material that will seat tightly under all prevailing conditions of field use. Pins and bushings shall be of bronze or other non-corrodible, non-sticking material. The closure element (e.g., clapper) shall be internally spring loaded to promote rapid and positive closure.

Approved double check valve assembly: An assembly of at least two independently acting approved check valves including tightly closing shut-off valves on each side of the check valve assembly and suitable leak-detector drains plus connections available for testing the water tightness of each check valve. ,

Approved reduced pressure principle backflow prevention device: A device incorporating two or more check valves, an automatically operated differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary appurtenances for testing. *

Approved use: An application of reclaimed water in a manner, and for a purpose, designated in a user permit complying with all applicable regulatory agency requirements issued by the District.

Approved use area: A site, with well-defined boundaries, designated in a Permit For Reclaimed Water Service issued by the District for an approved use.

As-built (record drawings: Record drawings that show the completed facilities as constructed or modified.

Automatic system: Controllers, valves, and associated equipment used to program and operate irrigation systems for the efficient application of reclaimed water.

Auxiliary water supply: Any water supply on or available to the premises other than the DISTRICT potable water or reclaimed water supplies.

AWWA: The American Water Works Association.

Board or Board of Directors: Board of Directors of the Otay Water District.

Code of Ordinances: The Otay Water District Code of Ordinances. CWRCB: The California Water Resources Control Board.

Commercial/industrial use: Water used for toilets, urinals, decorative fountains; industrial process such as rinsing, washing, cooling, flushing, circulation, or construction; and other related uses.

Commodity charge: A charge established by the DISTRICT for all reclaimed water used, whether such water use is estimated or actually metered.

Connection fee: A fee established by the DISTRICT for obtaining reclaimed water service from the DISTRICT by means of its reclaimed water facilities.

Cross-connection: Any unapproved and/or unprotected connection between any part of a potable water system and any source or system containing water or other substances not approved as safe and potable for human consumption.

Customer: Any person, group, firm, partnership, corporation, as-sociation, or agency who legally receives reclaimed water service from the DISTRICT.

Design area: A site, with well-defined boundaries, proposed to receive reclaimed water for an approved use, as delineated in the Application For Reclaimed Water Service.

Direct beneficial use: The use of reclaimed water which has been transported from the point of production to the point of use without an intervening discharge to waters of the State.

Discharge: Any release or distribution of reclaimed water to a use area or disposal site/mechanism (outfall, live stream discharge, municipal sewage system). All discharges of reclaimed water must be approved by the regulatory agencies.

DISTRICT: The Otay Water District.

District Engineer: The words District Engineer shall mean the General Manager of the District acting either directly or through the General Manager's properly authorized agents, such agents acting severally within the scope of the particular duties entrusted to them.

DOHS: The State of California Department Of Health Services.

Greenbelt areas: Areas including, but not limited to, parkways, parks, right-of-ways, and landscaping within and/or surrounding a community.

HCF: One hundred cubic feet, equivalent to 748 gallons. A common unit of water volume measurement.

Industrial process water: Water used in industrial facilities for rinsing, washing, cooling, circulation or construction.

Infiltration rate: The rate at which water penetrates the soil surface and enters the soil profile; usually expressed in inches per hour.

Landscape impoundment: A body of water containing reclaimed water which is used for aesthetic or irrigation purposes and which is not intended for public contact or ingestion.

Landscape irrigation/use: Reclaimed water used for the propagation and maintenance of trees, shrubs, ground cover and turf. This plant material is intended for erosion control and aesthetic value, not for resale/profit purposes.

Nonpotable water: Water that has not been treated for, or is not acceptable for, human consumption in conformance with Federal, State and local water standards. Nonpotable water includes reclaimed water.

Off-site facilities: Existing or proposed facilities under the control of the purveyor, from the source of supply to the point of connection with the customer's on-site facilities, normally up to and including the District's meter and meter box.

Off-Site Supervisor: Shall mean the District Engineer.

On-.site facilities: Existing or proposed facilities within property un-

der the control of the customer, normally downstream of the District's meter.

On-Site Reclaimed Water Supervisor: A qualified person designated by a reclaimed water user and approved by the District to be responsible for the safe and efficient operation of the user's reclaimed water system. This person shall be knowledgeable in the construction and operation of reclaimed water and irrigation systems and in the application of Federal, State and local guidelines, criteria, standards, and rules and regulations governing the use of reclaimed water.

Open space: Land that has been designated to remain undeveloped. These areas may receive reclaimed water service for landscape irrigation.

Permit: A processed and approved application package to, and agreement with, the District for reclaimed water service.

POC: Point of connection.

Ponding: Retention of piped water on the ground surface or man-made surface for a period of time following the cessation of an approved reclaimed water use activity such that potential hazard to the public health may result.

Potable water: Water which conforms to the latest Federal, State and local drinking water standards.

PSI: Pounds per square inch. The most common unit of pressure measurement.

Reclaimed water: As defined in Title 22, Division 4 of the California Code of Regulations, water which as a result of treatment of wastewater, is suitable for direct beneficial use or a controlled use that otherwise would not occur. The treatment of wastewater is accomplished in accordance with the criteria set forth in the code.

Reclaimed water facilities: Systems, structures, etc., used in the treatment, storage, pumping, transmission and distribution of reclaimed water.

Recreational impoundment: A body of reclaimed water used for recreational activities including, but not limited to, fishing, boating, and/or swimming. Allowable uses will depend on treatment level of the reclaimed water.

Regulatory agency: Those public entities legally constituted by Federal, State and local statutes to protect public health and water quality.

Runoff: Flow of water across either natural or man-made surfaces of ground off of the designated use area.

RWQCB: The Regional Water Quality Control Board.

Secondary effluent: Wastewater which has been treated by gravity sedimentation to remove settleable solids remaining after the primary biological treatment process.

Service: The delivery of reclaimed water to a user.

Service connection: The District facilities between the District reclaimed water distribution system and the customer's reclaimed water service valve, including, but not limited to, the meter, meter box, valves, and piping equipment.

SDCHS: The San Diego County Health Services or the Local Health Authority.

Standard Specifications: Specifications adopted by the DISTRICT for Water, Sewer and Reclaimed Facilities.

Tertiary effluent: Secondary effluent which has been disinfected and filtered.

Unauthorized discharge: Any release of reclaimed water that violates these Rules and Regulations or any applicable Federal, State, or local statutes, regulations, ordinances, contracts or other requirements.

Use area: The specific area designated to be served with reclaimed water through on-site reclaimed water facilities.

User: Any person, group, firm, partnership, corporation, association or agency accepting reclaimed water from the District reclaimed water facilities for use in accordance with these Rules and Regulations. Applicant, owner, customer and user are terms that are considered synonymous.

Windblown spray: Dispersed, airborne particles of water capable of being transmitted through the air to a location other than that for which the direct application of reclaimed water is approved.

*Devices used shall be selected from the list of devices as published by the State of California Department of Health Services.

END OF SECTION

PROCEDURES FOR OBTAINING RECLAIMED WATER SERVICE IN OTAY WATER DISTRICT

The following procedures normally occur during the obtaining and ongoing administration of a reclaimed water service. Service procedures for irrigation and construction use differ. The following procedures are listed in the order that they normally occur.

(1) PRELIMINARY MEETING

Applicant meets with the District to establish potential service locations and service pressures for proposed irrigation or construction facilities. Areas that may receive reclaimed water and areas that must receive potable water are established.

(2) APPLICATION SUBMITTAL

Applicant completes and submits to the District an application form and service exhibit showing proposed area(s) to receive reclaimed water, proposed service locations, meter sizes, size and location of District-owned facilities that would provide service, and any other specific call-outs regarding reclaimed water use.

(3) USER PERMIT ISSUANCE

District reviews application form and service exhibit and, if acceptable, submits copies to RWQCB for their approval. The District submits copies to appropriate health department(s) for their review. When regulatory review of application is complete, the District issues User permit when authorized by RWQCB.

(4) PLAN SUBMITTAL

Project Landscape Architect prepares and submits plans and specifications per requirements of all regulating authorities. Plan review and inspection deposit is paid before the District approves the plans. Plans and materials list must be approved and signed prior to facilities installation. Construction water User prepares location drawing and submits to the District for review.

(5) CONSTRUCTION SCHEDULE

Contractor submits facilities installation schedule to the District for initiating inspection process. At least 48 hours notice must be given before starting work and before all inspection requirements.

(6) SERVICE CONNECTION

User or Operator requests the District to install meter(s) prior to approval of permit. Prior to

approval of permit, interim service may be provided by the District. Application for meter(s) must be accompanied by all applicable fees.

(7) FINAL INSPECTION

Project Landscape Architect prepares as-built drawings and control charts and submits to the District for review and approval prior to regular service start-up. Contractor requests the District to perform final inspection after completion of facilities installation and approval of any required as-built documents. Operational testing is included as part of final inspection.

(8) CERTIFICATION SUBMITTAL

Operator completes and submits operation certification form as part of regular service start-up request. After final inspection, the District completes the permit for reclaimed water service form and submits copies to RWQCB for their approval. If User changes Operator, a new operation certification form must be processed through the District and the RWQCB.

(9) PERMANENT SERVICE

User requests the District for service start-up after final inspection and completed certification. The District notifies RWQCB of intent to begin service and, upon authorization by RWQCB, the District begins service. The District sets meters as required. Start-up requests must be accompanied by deposit. After start-up, the District confirms service to the RWQCB and state and county health departments.

(10) SYSTEM SURVEILLANCE

The District Off-Site Supervisor regularly inspects on-site systems and operations for conformance with the OWD Rules and Regulations for Reclaimed Water.

(11) REPORTING

The District reports volume of reclaimed water consumed by the User as part of billing. The District reports quality of reclaimed water only on specific request by the User.

(12) VIOLATIONS

The District determines violations of the OWD Rules and Regulations for Reclaimed Water Use and immediately notifies the User. Violations constituting immediate public health danger and minor violations not corrected in reasonable time result in suspension of service by shutting off meter and locking it. Service resumption must be accompanied by start-up fee.

W.O./F.N. #_____

OTAY WATER DISTRICT

STATUS OF APPLICATION FOR RECLAIMED WATER SERVICE

To:

Date:

We received your application for reclaimed water service for the project(s) listed below. The application has been reviewed by our engineers in accordance with the Otay Water District's Rules and Regulations for Reclaimed Water Service and the ability of our system to supply you with the quantity of reclaimed water you have requested. If you have any questions, please contact _____ (review Engineer) at _____ (phone #).

Project Name: _____

Application Reviewed On: _____

Status:

- [] We require payment of deposit before review can be completed.
- [] Your application has been approved by the Otay Water District.
- [] Your application has been sent to the San Diego Co. Dept. of Health Services for review.
- [] Your application is incomplete, and we request additional information (see comments).
- [] Your application has been returned (see comments).
- [] Your application for reclaimed water service has been denied (see comments).

Comments:

_____

_____

_____

_____

_____

_____

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_____

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_____

W.O./F.N. #_____

OTAY WATER DISTRICT

CHECK LIST/ACTION REQUEST FORM FOR OBTAINING RECLAIMED WATER SERVICE

This form is to be used by the applicant, Otay Water District (OWD) and County of San Diego Department of Health Services (DOHS) to request specific action or items needed to complete the process for obtaining reclaimed water service. Complete each step in the sequence shown. This checklist keeps all entities informed of the application process progress and the steps necessary to provide reclaimed water service.

To:_____

Requested By:_____ Signed:_____

Project Name:_____ Date:_____

Specific-Action Requested:_____

_____

Date
Completed

_____ 1. Applicant and OWD determine if the proposed use area will be served with reclaimed water.

_____ 2. Applicant submits a completed application to OWD.

_____ 3. OWD reviews the application for completeness.

_____ 4. OWD sends the application to the San Diego County DOHS.

_____ 5. Applicant submits to OWD:

- Completed irrigation plans for construction or conversion.
- Work schedule for construction or conversion.
- Required review deposit (deposits for OWD and DOHS)

_____ 6. OWD and DOHS reviews the plans.

_____ 7. Upon approval of plans, the applicant shall pay administrative/construction-inspection deposits to OWD.

_____ 8. Applicant constructs/converts facilities.

_____ 9. Applicant submits as-built plans/controls chart maps to OWD.

_____ 10. Applicant requests final inspection by OWD.

_____ 11. OWD and/or DOHS performs final inspection and observes operational testing. If necessary, a complete cross-connection test will be performed.

_____ 12. After final inspection passes, OWD notifies DOHS that project is complete.

_____ 13. OWD confirms service to State and County Health Departments.

Revised 08/07/92

RECLAIMED WATER NOTES

1. ALL ON-SITE IRRIGATION IMPROVEMENTS SHOWN ON THESE PLANS ARE PART OF A RECLAIMED WATER DISTRIBUTION SYSTEM. NO CONSTRUCTION WILL BE ALLOWED UNTIL ALL APPROVALS HAVE BEEN OBTAINED.

2. CROSS CONNECTIONS BETWEEN RECLAIMED WATER LINES AND POTABLEWATER LINES IS STRICTLY PROHIBITED.

3. USE OF RECLAIMED WATER SHALL ADHERE TO TITLE 22, DIVISION 4, CHAPTER 3 OF THE CALIFORNIA CODE OF REGULATIONS AND THE CURRENT RULES, REGULATIONS AND SPECIFICATIONS OF THE OTAY WATER DISTRICT.

4. THE OTAY WATER DISTRICT INSPECTION DEPARTMENT SHALL BE NOTIFIED 48 HOURS PRIOR TO THE START OF CONSTRUCTION AT (619) 670-2222. ALL WORK PERFORMED WITHOUT BENEFIT OF INSPECTION SHALL BE SUBJECT TO REJECTION AND REMOVAL.

5. PUBLIC FACILITIES, SUCH AS DRINKING AND DECORATIVE FOUNTAINS,COMFORT STATIONS, PLAYGROUND EQUIPMENT, ETC., DO/DO NOT (CHOOSE ONE) EXIST ON THIS PROJECT.

6. ALL ON-SITE RECLAIMED WATER IRRIGATION PIPING, AND ON-SITE POTABLE WATER PIPING INSTALLED UNDER THIS DESIGN SHALL BE IDENTIFIED IN ACCORDANCE WITH THE OTAY WATER DISTRICT STANDARD SPECIFICATIONS, SECTION 4.

7. ALL ON-SITE RECLAIMED WATER PIPING SHALL BE PURPLE COLORED PVC CONTINUOUSLY STENCILED ON OPPOSITE SIDES OF THE PIPE WITH THE WORDS "CAUTION -- RECLAIMED WATER". APPROVED MANUFACTURERS OF THIS PIPE CAN BE FOUND IN THE OTAY WATER DISTRICT'S "APPROVED MATERIALS LIST".

8. ALL ON-SITE POTABLE WATER LINES SHALL BE WHITE PVC UNLESS OTHERWISE APPROVED BY THE DISTRICT.

9 UNLESS OTHERWISE DIRECTED BY THE DISTRICT, A 4-FOOT HORIZONTAL SEPARATION BETWEEN POTABLE WATER AND CONSTANT PRESSURE RECLAIMED WATER LINES SHALL BE MAINTAINED AT ALL TIMES. THE POTABLE LINES SHALL BE INSTALLED ABOVE THE RECLAIMED LINES.

10. WHERE POTABLE LINES AND CONSTANT PRESSURE RECLAIMED WATER LINE CROSS, THE RECLAIMED WATER LINE SHALL BE INSTALLED BELOW THE POTABLE WATER LINE IN A CLASS 200 PURPLE COLORED PVC SLEEVE. THE SLEEVE SHALL EXTEND 5-FEET ON EITHER SIDE OF THE POTABLE LINE, FOR A TOTAL OF 10-FEET.

11. A MINIMUM VERTICAL SEPARATION OF 12-INCHES SHALL BE MAINTAINED BETWEEN UTILITIES AT ALL TIMES.

12. HOSE BIBS ARE STRICTLY PROHIBITED. NO POTABLE WATER HOSE BIBS SHALL BE INSTALLED OUTSIDE OF BUILDINGS.

13. ALL SPRAY HEADS, VALVE BOXES, QUICK COUPLER VALVES SHALL BE CLEARLY COLOR CODED (PURPLE) TO INDICATE THE USE OF RECLAIMED WATER.

14. RECLAIMED WATER LINES SHALL NOT CROSS ROADS, STREETS, OR EASEMENTS UNLESS SPECIFICALLY SHOWN ON THESE PLANS.

15. ALL PRESSURE LINES SHALL BE TESTED WITH HYDROSTATIC PRESSURE AS REQUIRED IN THE OTAY WATER DISTRICT STANDARD SPECIFICATIONS, AND ALL NON-PRESSURE LINES SHALL BE TESTED WITH THE EXISTING STATIC LINE PRESSURE. NO LEAKS SHALL BE ALLOWED. CONTRACTOR SHALL PROVIDE ALL EQUIPMENT FOR HYDROSTATIC TESTS. THESE TESTS SHALL BE WITNESSED BY A REPRESENTATIVE OF THE OTAY WATER DISTRICT.

16. ALL SIGNAGE SHALL BE APPROVED AND INSTALLED PRIOR TO ENERGIZING THE SYSTEM WITH RECLAIMED WATER. A SIGNAGE PLAN INDICATING USE OF RECLAIMED WATER SHALL BE SUBMITTED TO THE OTAY WATER DISTRICT FOR APPROVAL PRIOR TO INSTALLATION. AS A MINIMUM, SIGNS MUST BE POSTED AND WRITTEN IN ENGLISH AND SPANISH OR THE INTERNATIONAL SYMBOL (DO NOT DRINK).

17. METERS SHALL BE SIZED BY THE OTAY WATER DISTRICT.

18. ALL RECLAIMED WATER SERVICES SHALL REQUIRE BACKFLOW PREVENTION AND A Y-STRAINER. SEE STANDARD DRAWING W-45 IN THE OTAY WATER DISTRICT STANDARD SPECIFICATIONS. SERVICE SHALL NOT BE ESTABLISHED UNTIL THESE DEVICES HAVE BEEN INSTALLED AND CERTIFIED.

19. PRIOR TO ENERGIZING THE ON-SITE SYSTEM WITH RECLAIMED WATER, ONE (1) COMPLETE SET OF LAMINATED CONTROLLER CHARTS SHALL BE PROVIDED TO THE OTAY WATER DISTRICT.

20. EACH AUTOMATIC CONTROLLER AND ITS ASSOCIATED EQUIPMENT SHALL BE IDENTIFIED WITH A SIGN BEARING THE WORDS "RECLAIMED WATER USED FOR IRRIGATION" IN ENGLISH AND SPANISH, WITH YELLOW LETTERS AT LEAST I-INCH HIGH ON A GREEN BACKGROUND. THE SIGN SHALL BE SO PLACED THAT IT CAN BE READILY SEEN BY AN OPERATIONS PERSONNEL UTILIZING THE EQUIPMENT.

21. THE CONTRACTOR SHALL ADJUST ALL SPRINKLER HEADS FOR OPTIMUM PERFORMANCE. THIS SHALL INCLUDE THROTTLING THE FLOW CONTROL AT EACH VALVE TO OBTAIN THE OPTIMUM OPERATING PRESSURE FOR EACH SYSTEM. CONDITIONS THAT CAUSE OVERSPRAY, PONDING, OR RUNOFF SHALL BE ELIMINATED. ADJUST SYSTEM TO AVOID THESE CONDITIONS.

22. THE IRRIGATION SYSTEM HAS BEEN DESIGNED TO AND SHALL BE OPERATED BETWEEN THE HOURS OF 9:00 PM AND 6:00 AM UNLESS OTHERWISE APPROVED BY THE DISTRICT ENGINEER.

23. NO SUBSTITUTION OF PIPE MATERIALS WILL BE ALLOWED WITHOUT PRIOR APPROVAL OF THE OTAY WATER DISTRICT.

24. AN ANNUAL CROSS-CONNECTION INSPECTION WILL BE DONE BY EITHER THE OTAY WATER DISTRICT OR SAN DIEGO COUNTY DEPARTMENT OF HEALTH SERVICES. COPIES OF INSPECTION REPORTS WILL BE FORWARDED TO THE NON-INSPECTING PARTY.

25. FAILURE TO COMPLY THE ABOVE GUIDELINES IS A VIOLATION OF THE OTAY WATER DISTRICT'S RULES AND REGULATIONS, AND WILL RESULT IN SUSPENSION OF SERVICE UNTIL THE APPROPRIATE CORRECTIVE STEPS HAVE BEEN TAKEN.